

REVISION OF *AROCERA* SPINOLA, WITH THE  
DESCRIPTION OF TWO NEW SPECIES  
(HETEROPTERA: PENTATOMIDAE)<sup>1</sup>

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**Abstract.**—*Arocera* Spinola contains two subgenera, the nominate subgenus and *Euopta* Stål. Diagnoses are provided for *Arocera*, *Euopta*, and all previously described species. Two new species are described: *A. (Euopta) variegata* from Argentina and *A. (Euopta) sexpunctata* from Ecuador. *Arocera apta* (Walker) and *A. melanopyga* (Stål) are resurrected from the synonymy of *A. spectabilis* (Drury), *A. placens* (Walker) is resurrected from the synonymy of *A. nigrorubra* (Dallas), *A. aequinoxialis* (Westwood) is resurrected from the synonymy of *A. acroleuca* (Perty), and *A. repleta* is resurrected from the synonymy of *A. elongata* and placed as a subspecies of that species. *Arocera affinis* Distant, 1880, *A. protea* Distant, 1880, *A. altivola* Distant, 1893, *A. chiriquensis* Distant, 1893, and *A. contralineata* Pirán, 1955 are all removed from the synonymy of *A. nigrorubra* (Dallas, 1851) and are placed as new synonyms of *A. placens* (Walker, 1867). *Arocera patibulata* Distant, 1880 and *A. jalapensis* Distant, 1893 are both removed from the synonymy of *A. spectabilis* (Drury, 1782) and are also placed as new synonyms of *A. placens*. *Arocera crucigera* Haglund, 1868 and *A. schumanni* Distant, 1890 are both removed from the synonymy of *A. spectabilis*; *A. crucigera* is placed as a new synonym of *A. apta* (Walker, 1867), and *A. schumanni* is placed as a new synonym of *A. melanopyga* (Stål, 1858). Lectotypes are designated for *A. affinis*, *A. schumanni*, *Pentatoma aequinoxialis*, *Strachia apta*, and *S. nigrorubra*. A key is provided to aid in the identification of species of *Arocera*.

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The genus *Arocera* Spinola *sensu lato* was revised by McDonald in 1984, but the discovery of two undescribed species and several taxonomic problems have necessitated a new revision of the genus. Rider (1991) divided *Arocera* into two genera based primarily on differences in coloration, punctuation, and the male and female genitalia. He transferred seven species of *Arocera* [*colombiana* McDonald, *inmaculata* (Pirán), *principialis* (Stål), *rufolimbata* Stål, *rufonotata* Stål, *splendens* (Blanchard), and *verdana* McDonald] into his newly described genus *Rhysocephala*. He provided diagnoses for all known species and described three new species.

*Arocera* belongs in the nominate tribe and subfamily of the Pentatomidae and is characterized by the lack of a spine or tubercle on the third (second visible) abdominal sternite and by elongate ostiolar rugae, reaching more than half the distance from the ostioles to the lateral metapleural margins. Rolston and McDonald (1984) provided a key to related western hemisphere genera occurring north of South America, and Rolston (1987) provided a key to the South American genera that have both elongate ostiolar rugae and the base of the abdomen unarmed. The species of *Arocera* are some of the most brightly colored species of New World Pentatomidae. Rider (1991) provided a key to the pentatomine genera, which have at least some brightly colored species.

Measurements are in millimeters; measurements in parentheses are of the holotype.

Measurements of the body were taken with the anterior and posterior margins of the scutellum in approximately the same plane of focus. Total length was measured slightly differently between sexes. In females, total length was simply the distance from the apex of the head to the posterior apex of the body excluding hemelytral membranes. Because in males the pygophore may be distended by varying amounts, total length was measured from the apex of the head to the posterior-most part of the last connexival segment. Total width was measured across the humeral angles, although in some cases the width across the abdomen was greater. Head length was measured from the apex of the head to an imaginary line drawn through the posterior margins of the ocelli. Head width was measured across the eyes. When label data are presented in the text, each letter in parentheses represents a separate label with (a) being closest to the specimen. Type label data is cited as written and placed within quotation marks. Determination labels and collection labels were sometimes omitted from the label data citations for brevity. Acronyms are defined in the acknowledgments.

*Arocera* Spinola, 1837

*Arocera* Spinola, 1837:316–318; Stål, 1861:139; Stål, 1867:529; Stål, 1872:37; Distant, 1880:72–73; Lethierry and Severin, 1893:158; Kirkaldy, 1909:109; Froeschner, 1981:68; Rolston and McDonald, 1984:74, 75; McDonald, 1984:97–99; Rolston, 1987:63, fig. 5.

*Oedosoma* Amyot and Serville, 1843:128 [synonymized by Stål, 1872].

*Estphoria* Gistel, 1848:VIII (replacement name for *Oedosoma*) [synonymized by Kirkaldy, 1909].

*Type species. Arocera: Arocera aurantiaca* Spinola, 1837 (= *Pentatoma acroleucum* Perty, 1833), by monotypy. *Oedosoma: Pentatoma acroleucum* Perty, 1833, by monotypy.

*Diagnosis.* Dorsal coloration usually yellow, orange, or red, with black markings (specimens of *A. elongata elongata* are black with orange markings); dorsal punctation minute, sparse, especially on pronotum.

Vertex and jugal surfaces glabrous with at most a few weak wrinkles on juga; lateral jugal margins slightly reflexed, becoming inflated near apices; juga and tylus subequal in length or juga slightly longer than tylus. First antennal segment reaching nearly to apex of head. Rostrum reaching hind coxae or beyond; first rostral segment reaching slightly beyond posterior terminations of bucculae; bucculae not lobed posteriorly.

Anterolateral pronotal margins reflexed; humeral angles rounded. Ostiolar rugae elongate, curving slightly cephalad, each extending about two-thirds distance from mesial margin of ostiole to lateral metapleural margin. Third (second visible) abdominal segment unarmed. Tarsi three-segmented.

Posteroventral surface of pygophore forming obtuse, semicircular carina; surface of pygophore between carina and inferior ridge lacking black spicules, but often with irregular wrinkles or carinae (Fig. 40); dorsolateral angles of inferior ridge not produced into spiculate horns. Lateral wall of genital cup with large, minutely striated, sclerotized tubercle (Fig. 41, sct); superior ridge prominent, usually expanding over posterolateral angles of proctiger. Each paramere with basal process either obtuse (Fig. 29, tub) or large and spatulate (Fig. 49, bsp). Posterior margin of proctiger entire,



not produced caudally (Fig. 13). Ninth paratergites flat to slightly concave (Fig. 19). Spermathecal bulb either constricted near base (Fig. 4) or armed with long digitiform process (Fig. 6), not simply globose; dilation of spermatheca entirely membranous, lacking slightly sclerotized area proximally (Fig. 1).

*Comments.* Stål (1872) divided the genus *Arocera* into two subgenera based primarily on the shape of the head and the length of the first antennal segment. He included only one species, *A. acroleuca*, in the nominate subgenus, but he considered *A. acroleuca* and *A. aequinoxialis* to be synonyms. They are both valid species and can be separated from the remaining species by the distinctive dorsal coloration, the shape of the head, and the form of the female genital plates. The remaining eight species known to Stål were placed in the subgenus *Euopta* Stål, but three of these, *A. rufolimbata*, *A. rufonotata*, and *A. splendens*, Rider (1991) transferred to the genus *Rhysocephala*. McDonald (1984) described *A. colombiana* and *A. verdana*, both of which were also transferred to *Rhysocephala*. Pirán (1963) described *Pharypia immaculata* which Grazia (1986) transferred to *Arocera*. Rider (1991) then transferred *A. immaculata* to *Rhysocephala*. Three valid species and one subspecies have been added to *Arocera* since the work of Stål. Walker (1867) described *Strachia apta* and *S. placens* which were both later transferred to *Arocera*. Showalter (1929) inadvertently “described” *A. elongata* when he published a picture of the species with a manuscript name of Uhler’s in an issue of National Geographic. In 1929, this was sufficient for a valid species description. Finally, Van Duzee (1931) described *A. repleta* which is here considered a subspecies of *A. elongata*.

One species has been placed in *Arocera* and was subsequently transferred to another genus. Walker (1867) described *Strachia nigropicta* from at least two specimens from Brazil. Distant (1900) transferred this species to *Arocera*. Later, Rolston (1976) transferred it to the genus *Pharypia*, placing it as a junior synonym of *P. generosa* Stål. Rolston also made lectotype and paralectotype designations.

At present eleven species and one subspecies are recognized in *Arocera*.

KEY TO THE SUBGENERA AND SPECIES OF *AROCERA* SPINOLA

1. Dorsal surface pale yellow with large, U-shaped black marking (Figs. 25, 32); dorsal surface of head transversely concave; ninth paratergites slender, width less than half the length (Fig. 21) subgenus *Arocera* Spinola ..... 2
- Dorsal surface yellow, orange, or red with dark brown or black macules, but not forming U-shaped marking; dorsal surface of head flat to slightly concave; ninth paratergites relatively broad, width greater than half the length (Figs. 19, 20) subgenus *Euopta* Stål ..... 3
- 2(1). Femora fuscous to black except, at most basal one-fourth yellow with margin between yellow and black areas gradual, diffuse; lateral margins of black, U-shaped marking on dorsum usually entire, extending laterad over distal end of R + M vein (Fig. 25) (southern and eastern South America) ..... *acroleuca* (Perty)
- Femora fuscous to black on distal one-half, basal one-half yellow with margin between yellow and black areas sharp, well-defined; lateral margins of black, U-shaped, dorsal marking usually emarginate near apex of corium, usually not extending laterad over distal end of R + M vein (Fig. 32) (northern and western South America) ..... *aequinoxialis* (Westwood)

- 3(1). Antennal segment I fuscous or black, concolorous with rest of antennal segments ..... 4
- Antennal segment I yellow, orange, or red, distinctly lighter in color than rest of antennal segments ..... 6
- 4(3). Posterolateral angles of pygophore armed with 1–3 minute, medially directed teeth (Fig. 40); each paramere in ectal view uniformly elongate, apex curving only slightly laterad (Fig. 43) (Colombia) ..... *nigrorubra* (Dallas)
- Posterolateral angles of pygophore unarmed (Figs. 46, 55); each paramere in ectal view sinuously elongate, apex curving distinctly laterad (Figs. 51, 60) ..... 5
- 5(4). Posteroventral surface of pygophore with relatively deep, semicircular depression and sharply carinate ventral margin; in ectal view, lateral margin of each paramere distinctly sinuous, subapical notch well-defined (Fig. 50), (Bolivia and northern Argentina) ..... *variegata* new species
- Posteroventral surface of pygophore with relatively shallow, semicircular depression, and obtusely carinate ventral margin; in ectal view, lateral margin of each paramere slightly sinuous, subapical notch not distinct (Fig. 59) (Mexico and Jamaica south to Argentina) ..... *placens* (Walker)
- 6(3). Rostrum reaching onto posterior half of fifth (fourth visible) abdominal segment, often reaching onto sixth abdominal segment; dorsal surface bright orange with hemelytral membranes and ocellar areas of head black (Figs. 61, 69), or black with most of head, apex of scutellum, and two spots on each corium orange (Fig. 62) ..... 7
- Rostrum at most reaching on to anterior half of fifth (fourth visible) abdominal segment; dorsal surface yellow or orange with brown or black macules ..... 9
- 7(6). Dorsal surface mostly black with six orange spots, one on head, one on basal third of each corium, one on posterolateral angle of each corium, and one on apex of scutellum (Fig. 62), spot on apex of scutellum sometimes continued cephalad as thin orange line (northwestern South America) ..... *elongata elongata* Showalter
- Dorsal surface mostly orange, sometimes with a few small black markings ..... 8
- 8(7). Dorsal surface usually completely orange except for black hemelytral membranes and black spot around each ocellus (Fig. 61), sometimes with other black macules, but never in pattern described below; each paramere in ectal view not curving laterad apically (Fig. 68) (Panama and Costa Rica) ..... *elongata repleta* Van Duzee
- Dorsal surface orange except for base of head, hemelytral membranes and six small spots black: one on each basal angle of scutellum, one on each side of midline of scutellum about one-half distance from base to apex, and one on each side of midline of pronotum (Fig. 69); each paramere in ectal view curving distinctly laterad apically (Fig. 75) (Ecuador) ..... *sexpunctata* new species
- 9(6). Ocelli very small, distance from each ocellus to adjacent eye at least 3–4 times diameter of ocellus; dorsal margin of each paramere in lateral and medial views concave (Figs. 80, 81) (northwestern South America) ..... *rufifrons* (Dallas)
- Ocelli of normal size, distance from each ocellus to adjacent eye no more than 1–2 times diameter of ocellus; dorsal margin of each paramere in lateral and medial views distinctly sinuous (Figs. 87, 88, 94, 95, 101, 102) ..... 10
- 10(9). In lateral and medial views dorsal margin of each paramere with basal emargination very shallow (Figs. 87, 88) (Mexico and northern Central America) ..... *melanopyga* (Stål)
- In lateral and medial views, dorsal margin of each paramere with basal emargination relatively deep (Figs. 94, 95, 101, 102) (Costa Rica, Panama, and South America) ..... 11
- 11(10). Humeral angles black (Fig. 90); connexiva alternately fuscous and pale yellow



- (Fig. 90); usually with black spots on abdominal venter (southern and eastern Brazil) ..... *spectabilis* (Drury)
- Humeral angles yellow (Fig. 97); connexiva uniformly pale yellow (Fig. 97); abdominal venter uniformly pale yellow except for some black markings on basal plates (northern and western South America) ..... *apta* (Walker)

Subgenus *Arocera* Spinola, 1837

*Diagnosis.* Dorsal coloration pale yellow with large, U-shaped, black marking, open end on base of pronotum, closed end on hemelytral membranes (Figs. 25, 32). Dorsal surface of head distinctly, transversely concave. Posterolateral angles of pygophore prominent in lateral view, apices ventral to middle of pygophore (Figs. 28, 35). Each paramere with obtuse basal process, lacking large spatulate process (Figs. 29, 36). Ninth paratergites elongate, slender, width less than half the length (Fig. 21); spiracles on eighth paratergites exposed, clearly visible. Spermatheca with sclerotized rod swollen near proximal ends (Figs. 1, 3), spermathecal bulb constricted near base, with or without digitiform process (Figs. 2, 4).

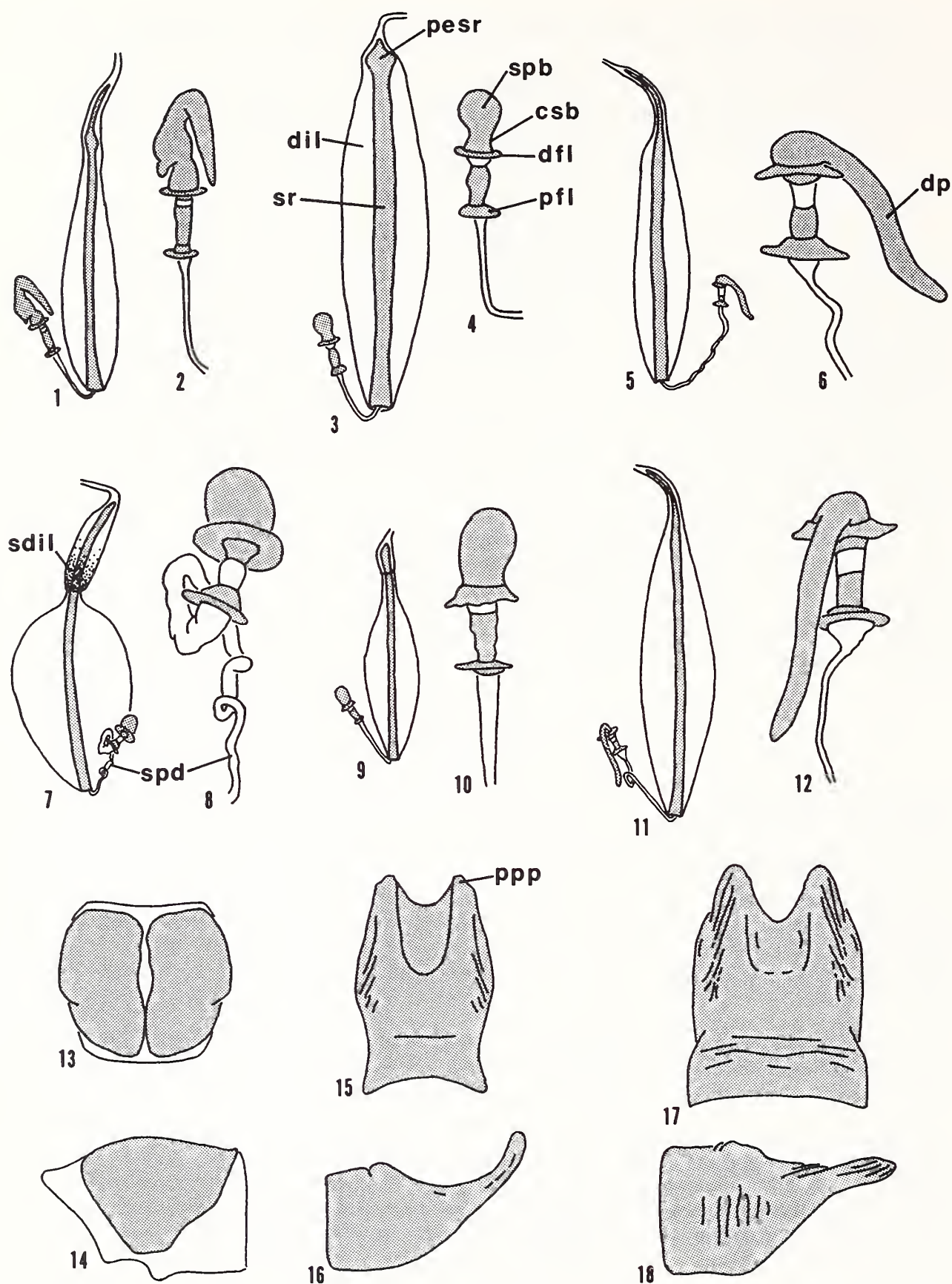
*Comments.* The difference between *Arocera* and *Euopta* are distinct and involve both the male and female genitalia, and the two subgenera could be elevated to genera. They do, however, have a number of characters in common, and so I have chosen to recognize them as subgenera. The subgenus *Arocera* contains only two very closely related species, *A. acroleuca* and *A. aequinoxialis*.

*Arocera (Arocera) acroleuca* (Perty, 1833)  
Figs. 1, 2, 25–31, Map 1

*Pentatoma acroleucum* Perty, 1833:168, pl. 33, fig. 11.  
*Cimex acroleucus*: Burmeister, 1835:366.  
*Arocera aurantiaca* Spinola, 1837:318; Herrich-Schäffer, 1844:90 [synonymized by Signoret, 1851].  
*Ooedosoma acroleucum*: Amyot and Serville, 1843:128.  
*Strachia acroleuca*: Dallas, 1851:263; Signoret, 1851:338; Stål, 1860:22; Walker, 1867:318.  
*Arocera acroleuca*: Stål, 1861:140; Distant, 1880:73 (part); Lethierry and Severin, 1893:158–159 (part); Pirán, 1966:86; McDonald, 1984:102–103, figs. 9–16 (part).  
*Arocera (Arocera) acroleuca*: Stål, 1872:38 (part); Kirkaldy, 1909:109 (part).

*Diagnosis.* Dorsal surface yellow with large, U-shaped, black marking; lateral margins of U-shaped mark usually entire and extending laterad across distal end of R + M vein (Fig. 25). Dorsal surface of head black with a few transverse wrinkles; antennae black. Anterolateral pronotal margins slightly convex (Fig. 25), slightly reflexed. Ventral surface yellow except most of head black; rostrum usually extending onto third (second visible) abdominal segment, yellow except segment IV black. Legs fuscous to black except coxae and trochanters yellow, each femur gradually becoming yellow near base. Extreme distal apices of juga often pale brown, this color sometimes continuing along reflexion of juga.

Posterolateral angles of pygophore continuing onto pygophoral surface as weak, obtuse, semicircular carina; inferior ridge in caudal view distinctly sinuous (Fig. 27). Each paramere in lateral and medial views F-shaped, with small, obtuse protuberance



Figs. 1-18. 1, 2. *Arocera (A) acroleuca*. 1. Spermatheca. 2. Spermathecal pump. 3, 4. *A. (A.) aequinoxialis*. 3. Spermatheca. 4. Spermathecal pump. 5, 6. *A. (Euopta) sexpunctata*. 5. Spermatheca. 6. Spermathecal pump. 7, 8. *Rhysocephala splendens*. 7. Spermatheca. 8. Spermathecal pump. 9, 10. *R. infuscata*. 9. Spermatheca. 10. Spermathecal pump. 11-14. *A. (E.) spectabilis*. 11. Spermatheca. 12. Spermathecal pump. 13. Proctiger, dorsal view. 14. Proctiger, lateral view. 15, 16. *R. macdonaldi*. 15. Proctiger, dorsal view. 16. Proctiger, lateral view. 17, 18. *R. ecuadoriensis*. 17. Proctiger, dorsal view. 18. Proctiger, lateral view. Symbols: csb,



on shaft (Figs. 29, 30); in ectal view paramere-head slightly produced both medially and laterally, distal margin nearly straight (Fig. 31). Sclerotized rod of spermatheca swollen and then somewhat elongate proximally (Fig. 1); spermathecal bulb constricted near base, with one long digitiform process connecting to top of bulb, and one short digitiform process connecting to side of bulb just above constriction (Fig. 2).

*Types.* Perty (1833) described this species from a single ♂ specimen. The type specimen of *Pentatoma acroleuca*, which is housed in the Zoologische Museum, Munich, was examined. The label data for the holotype specimen is (a) "Type. Perty." (b) "Brasilia a: acroleuca Pert" (c) "AROCERA ACROLEUCA Perty".

Spinola (1837) described *Arocera aurantiaca* from Brazil. The type specimen is not in the Spinola collection and was not located, but the description matches either *A. acroleuca* or *A. aequinoxialis* very closely. The type locality of Brazil puts it within the known range of *A. acroleuca*.

*Specimens examined.* 45 specimens collected from 2 October to 9 April; deposited in AMNH, BMNH, DAR, MACN, USNM, ZMB, ZSM. BOLIVIA: *Santa Cruz*: Tchito, Buena Vista. BRAZIL: *Bahia*: Encruzilhada; Nova Conquista. *Goiás*: Anápolis; Chapada dos Veadeiros, 18–24 km N Alta Paraíso; Jataí. *Mato Grosso*: Campo Grande; Nivac. *Minas Geraes*: Barroso; Diamantina; Faz. dos Campos; Pedra Azul; Sete Lagoas; Viçosa. *Rio de Janeiro*: Rio de Janeiro. *São Paulo*: Campinas; Cipó; São Paulo.

*Distribution.* Eastern and central South America (Map 1).

*Comments.* This species is nearly identical in coloration with *A. aequinoxialis*, and the two were considered conspecific until now. There are distinct differences in both the male and female genitalia as well as a couple of fairly consistent somatic characters. *Arocera acroleuca* has the femora fuscous to black except for at most the basal one-fourth yellow, and the transition from fuscous to yellow is gradual. *Arocera aequinoxialis* has the basal one-half of the femora yellow and the transition from fuscous to yellow is sharp. Both of these species are almost identical in coloration to *Pharypia gracilirostris* Stål but may be separated from that species by the unarmed abdominal venter and the shorter first rostral segment.

*Arocera (Arocera) aequinoxialis* (Westwood, 1837)

Figs. 3, 4, 21, 32–38, Map 1

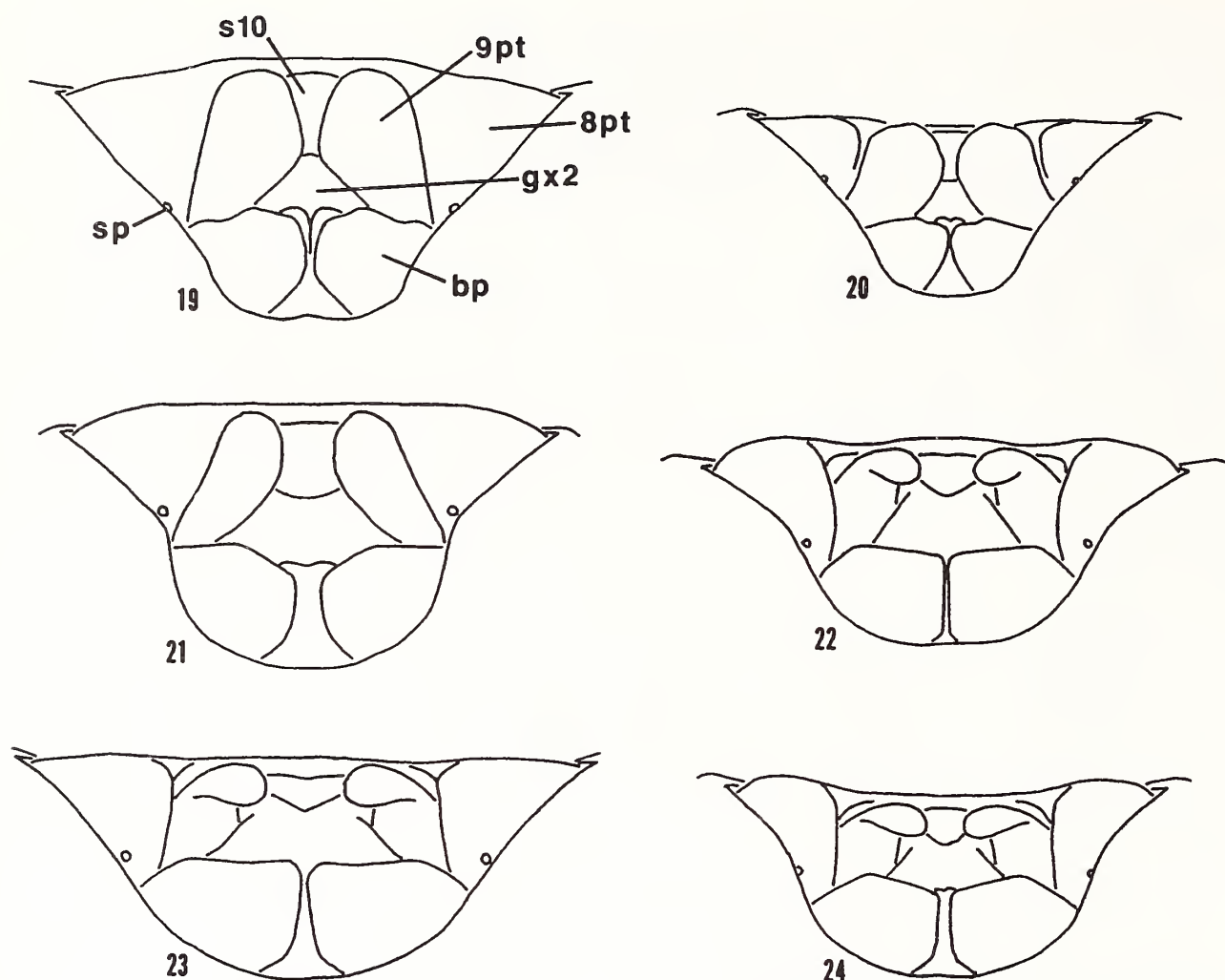
*Pentatoma aequinoxialis* Westwood, 1837:33.

*Arocera acroleuca* (of authors, not Perty): Distant, 1880:73 (part); Lethierry and Severin, 1893:158–159 (part); McDonald, 1984:102–103, figs. 9–16 (part).

*Arocera (Arocera) acroleuca* (of authors, not Perty): Stål, 1872:38 (part); Kirkaldy, 1909:109 (part).

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constriction of spermathecal bulb; dfl, distal flange; dil, dilation of spermatheca; dp, digitiform process; pesr, proximal end of sclerotized rod; pfl, proximal flange; ppp, posterior projection of proctiger; sdil, sclerotized portion of dilation of spermathecal duct; spd, spermathecal duct; sr, sclerotized rod; spb, spermathecal bulb.



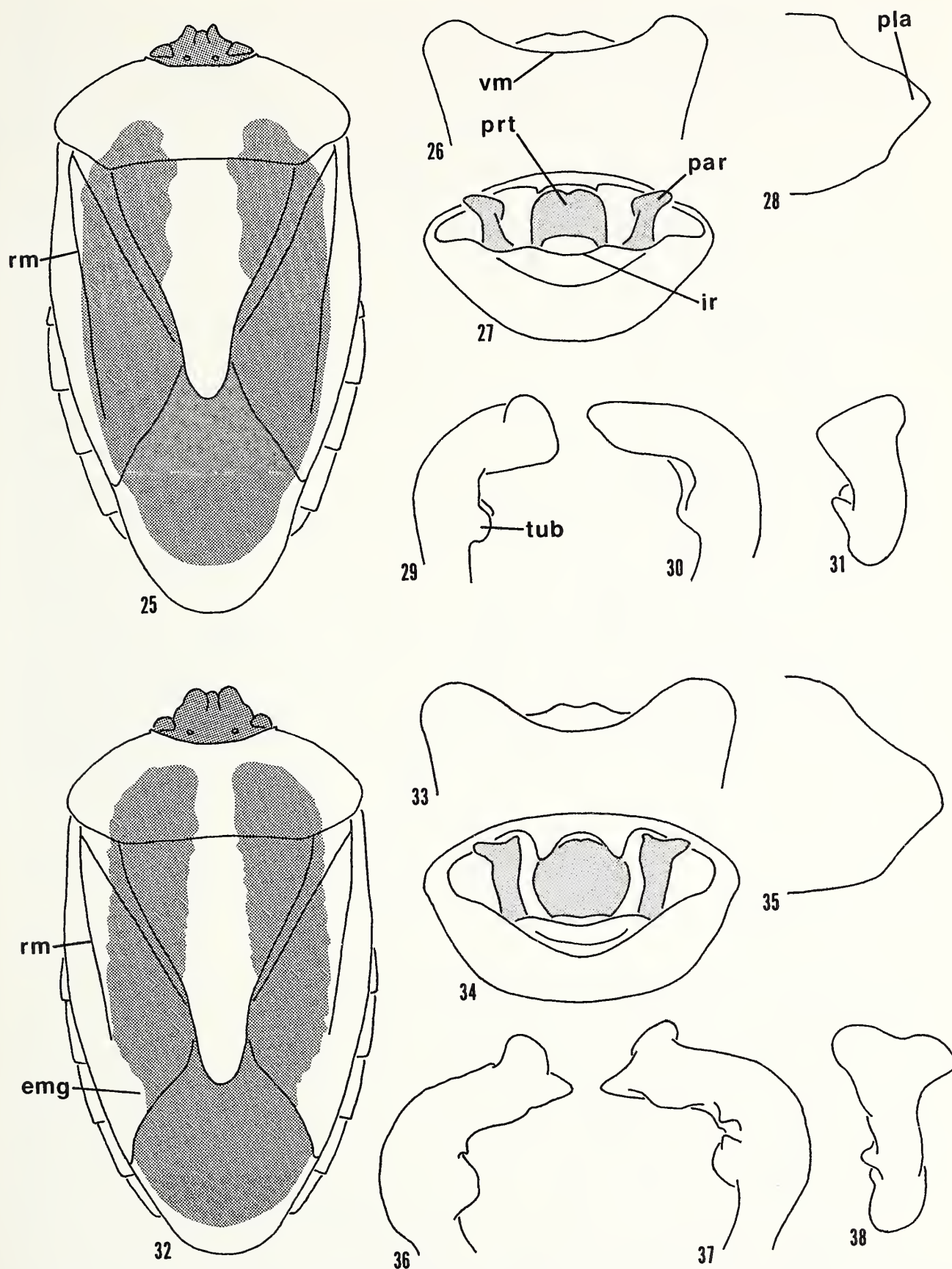
Figs. 19–24. Genital plates. 19. *Arocera* (*Euopta*) *sexpunctata*. 20. *A. (E.) variegata*. 21. *A. (A.) aequinoxialis*. 22. *Rhysocephala macdonaldi*. 23. *R. ecuadoriensis*. 24. *R. infuscata*. Symbols: bp, basal plate; gx2, gonacoxae 2; sp, spiracle; s10, sternite 10; 8pt, eighth paratergite; 9pt, ninth paratergite.

**Diagnosis.** Coloration essentially the same as *A. acroleuca* except for the following differences: basal half of femora yellow, transition from fuscous to yellow sharp; lateral margins of dorsal, U-shaped, black mark usually indented medially just anterior to hemelytral membranes, black extending laterally sometimes to distal end of each R + M vein, but usually not extending across R + M vein (Fig. 32); apices and reflexion of juga always black.

Posterolateral angles of pygophore continuing onto pygophoral surface as weak, obtuse, semicircular carina; inferior ridge in caudal view distinctly sinuous medially (Fig. 34). Each paramere in lateral and medial views F-shaped, with obtuse protuberance on shaft (Figs. 36, 37); in ectal view paramere-head distinctly produced both medially and laterally, apical margin distinctly concave (Fig. 38). Spermatheca with apex of sclerotized rod swollen, but not elongate proximally (Fig. 3); spermathecal bulb globose with basal constriction, lacking digitiform processes (Fig. 4).

**Types.** Westwood (1837) described *Pentatoma aequinoxialis* without designating a holotype or paratypes. One ♂ syntype and 1 ♀ syntype were located. The ♂ specimen labeled (a) "TYPE. = WESTW. (HOPE) C. Hemipt. 1837 Part I, page 33 Distant, P. Z. S., 1900, p. 807-825." (b) "Type" (c) "America aq." (d) "aquinoxialis Hope"





Figs. 25–38. 25–31. *Arocera* (*A.*) *acroleuca*. 25. Habitus. 26–28. Pygophore. 26. Ventral view. 27. Caudal view. 28. Lateral view. 29–31. Right paramere. 29. Lateral view. 30. Medial view. 31. Ectal view. 32–38. *A. (A.) aequinoxialis*. 32. Habitus. 33–35. Pygophore. 33. Ventral view. 34. Caudal view. 35. Lateral view. 36–38. Right paramere. 36. Lateral view. 37. Medial view. 38. Ectal view. Symbols: emg, lateral emargination in dorsal U-shaped marking; ir, inferior ridge; par, paramere; pla, posterolateral angle of pygophore; prt, proctiger; rm, R + M vein; tub, tubercle near base of paramere; vm, ventral margin of pygophore.



Map 1. *Arocera* (*A.*) *acroleuca* (●); *A. (A.) aequinoxialis* (○).



(e) "Pentat. marginalis H Sch: Hahn. 320" (f) "Arocera acroleuca Perty" (g) "TYPE HEM: 167 ½ PENTATOMA AEQUINOXIALIS WESTWOOD HOPE DEPT. OXFORD" is designated the lectotype. The ♀ specimen labeled (a) "Rio" (b) same as (g) for lectotype, is designated paralectotype. Both specimens were examined and are housed in the Oxford Entomological Museum, England.

*Specimens examined.* 86 specimens collected during every month of the year except February; deposited in AMNH, BMNH, CAS, DAR, DBT, HCO, LHR, MACN, USNM, ZMB. GUATEMALA: Morales. COSTA RICA: *Guanacaste*: Guanacaste. PANAMA: *Darién*: Santa Fe. COLOMBIA: *Amazonas*: Leticia. *Antioquia*: Valley of Medellín. *Cauca*: Cauca Valle. GUYANA: *East Demerara-West Coast Berbice*: Rockstone, Essequibok R. SURINAM: *Marowijne*: Nassau Mts, Marowijne R. FRENCH GUIANA: *Cayenne*: Cayenne; Crique Boulanger; Hwy D6 to Kaw, 33.5 km SE Roura; Hwy N2 to Regina, 67 km S Cayenne. ECUADOR: *Pastaza*: Cuisimi, on Rio Cuisimi, 150 km SE Puyo. PERU: Archinamiza. *Cusco*: Quince Mil. *Huanuco*: Tingo María, Rio Huallaga. *Loreto*: Iquitos, Amazon R; Rio Tapiche; middle Rio Ucayali. *Madre de Dios*: Rio Tabopata Reserve, 30 km SW Puerto Maldonado. *San Martín*: El Boquerón Pass; Palmas del Espino Uchiza. BOLIVIA: Las Juntas; Sara. *El Beni*: Reyes. *La Paz*: Tumupasa. *Santa Cruz*: Buena Vista; Saavedra Expt. Stn.; Santa Cruz. BRAZIL: *Amazonas*: Tefé. *Mato Grosso*: Corumba *Pará*: Santarém.

*Distribution.* Central America and northern and western South America (Map 1).

*Comments.* This species is very closely related to *A. acroleuca* but may be separated from that species by differences in both the male and female genitalia and usually by several color characters. The basal half of each femur is yellow, and the boundary between the fuscous and yellow areas is sharp; the same boundary in *A. acroleuca* is gradual, and only the basal one-fourth of the femur is yellow.

#### Subgenus *Euopta* Stål, 1872

*Arocera* (*Euopta*) Stål, 1872:38; Kirkaldy, 1909:109.

*Type species.* *Cimex spectabilis* Drury, 1782, by subsequent designation (Kirkaldy, 1909:XXX).

*Diagnosis.* Dorsal coloration yellow, orange, or red, with black markings, but not forming distinct U-shaped marking. Dorsal surface of head flat to only slightly concave. Pygophore with posterolateral angles prominent in lateral view, apices dorsal to middle of pygophore (Fig. 42). Each paramere C-shaped, with large, spatulate process near base (Fig. 49). Ninth paratergites relatively broad, width greater than half length (Figs. 19, 20); spiracles on eighth paratergites small, entirely or partially concealed under seventh abdominal tergites. Sclerotized rod of spermatheca acuminate and curved proximally, not swollen (Figs. 5, 11); spermathecal bulb not constricted basally, possessing single, long, digitiform process (Figs. 6, 12).

*Comments.* The above characters will easily separate the species of this subgenus from the species of the nominate subgenus.

The species of this subgenus may be grouped into three species groups. *Arocera elongata* and *A. sexpunctata*, the largest species, have the first antennal segment pale, the hemelytral membranes completely black, and the parameres similarly shaped. *Arocera nigrorubra*, *A. placens*, and *A. variegata*, the smallest species, have the first antennal segment black, the hemelytral membranes black with the posterior margins

pale, and the paramere-head and basal, spatulate process nearly parallel. *Arocera apta*, *A. melanopyga*, *A. rufifrons*, and *A. spectabilis* are medium-sized and have the first antennal segment pale, the hemelytral membranes black with the posterior margins pale, and the paramere-head and basal spatulate process nearly perpendicular.

*Arocera (Euopta) nigrorubra* (Dallas, 1851)

Figs. 39–43, Map 2

*Strachia nigrorubra* Dallas, 1851:267; Walker, 1867:318.

*Strachia quadripunctata* Signoret, 1851:337, pl. 10, fig. 4 [synonymized by Stål, 1872].

*Arocera nigrorubra*: Stål, 1861:140; Lethierry and Severin, 1893:159; Rolston, 1976:3; McDonald, 1984:105–108, figs. 26–36 (part).

*Arocera (Euopta) nigrorubra*: Stål, 1872:38; Kirkaldy, 1909:109.

**Diagnosis.** Dorsal surface of head entirely black, with weak, transverse striations on bases of jugs; apex of head rounded. Lateral jugal margins reflexed, sinuous; apices of jugs somewhat inflated. Antennal segment I black (remainder of antennae missing in only known specimen). Dorsal surface of pronotum orange-red with anterior (except medially) and anterolateral margins and humeral angles black; and with small, black spot on each side of middle (Fig. 39). Scutellum black with orange-red, cruciform marking, posterior part of cross not reaching apex of scutellum; small, orange-red spot laterally on each side near inner corial angle. Basal one-third to one-half of each corium black except orange intruding anteriorly for short distance on clavus; small, round, black spot just mesial to apex of each R + M vein; embolium much wider apically than basally; posterior margins of coria convex (Fig. 39). Hemelytral membranes black with posterior margins pale (Fig. 39) Connexiva alternately black and orange-red.

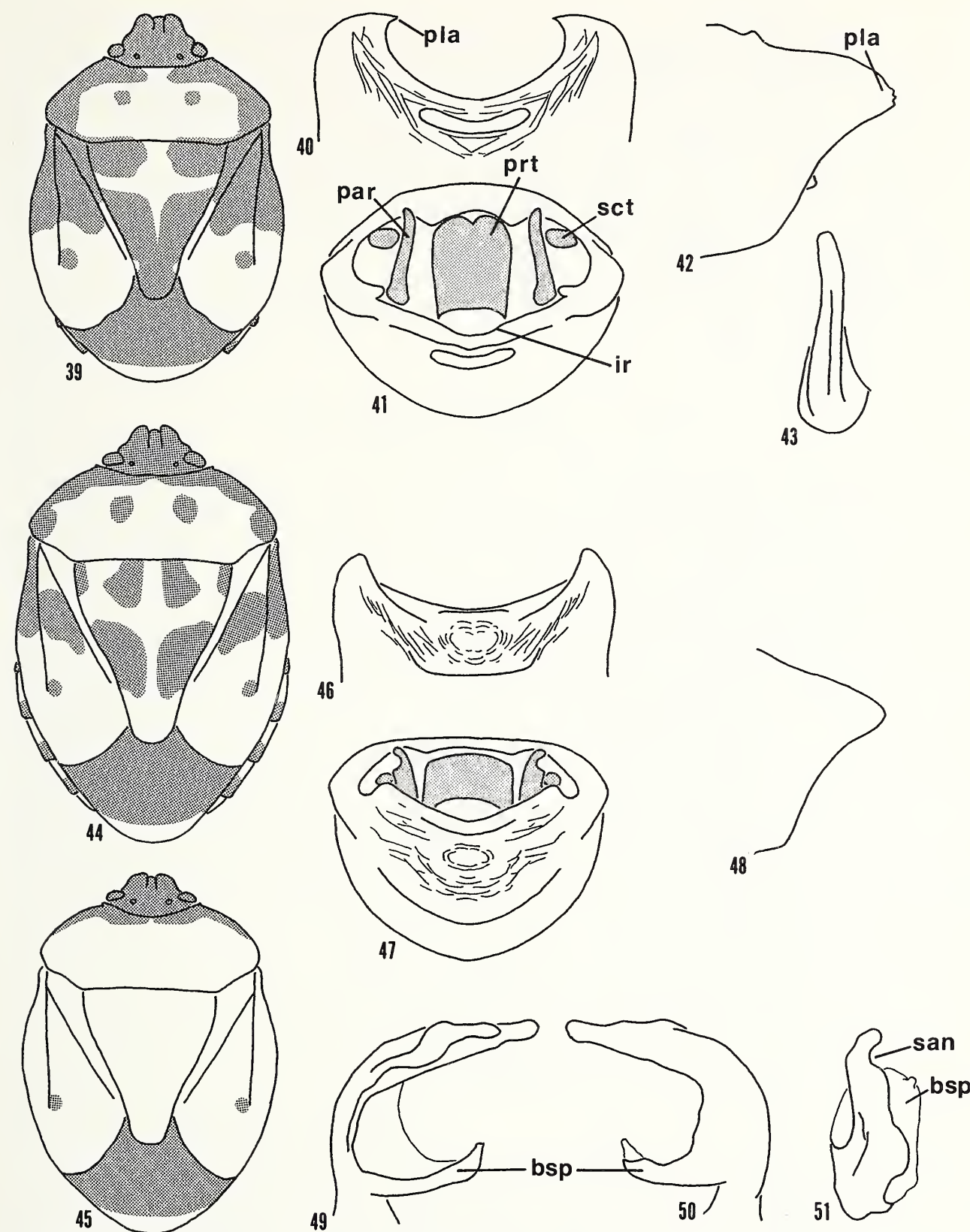
Ventral surface of head and thorax completely black; rostrum black, extending to base of abdomen; legs black. Abdominal sternites orange-red laterally, black medially, except last segment orange-red with medial, chordate, black spot; posterolateral angles black, and small, black spot surrounding each spiracle.

Posteroventral surface of pygophore with semicircular impression, and weak submarginal carina parallel to posterior margin of pygophore becoming prominent medially; posterior margin in ventral view arcuately rounded, posterolateral angles armed with two to three minute, medially-directed teeth (Fig. 40). Parameres uniformly elongate, each lacking subapical emargination, narrowly rounded apically in ectal view, curving only slightly laterad (Fig. 43). Female unknown.

**Types.** Dallas (1851) described *Strachia nigrorubra* from an indeterminate number of specimens from Colombia without designating a holotype or paratypes. Only one syntype specimen, a ♂, was located and is here designated lectotype. It has the following label data: (a) "Type" (b) "Colombia" (c) "fusagasuga Rolu." (d) "33. STRACHIA NIGRORUBRA." This specimen was examined and is conserved in the British Museum (Natural History), London.

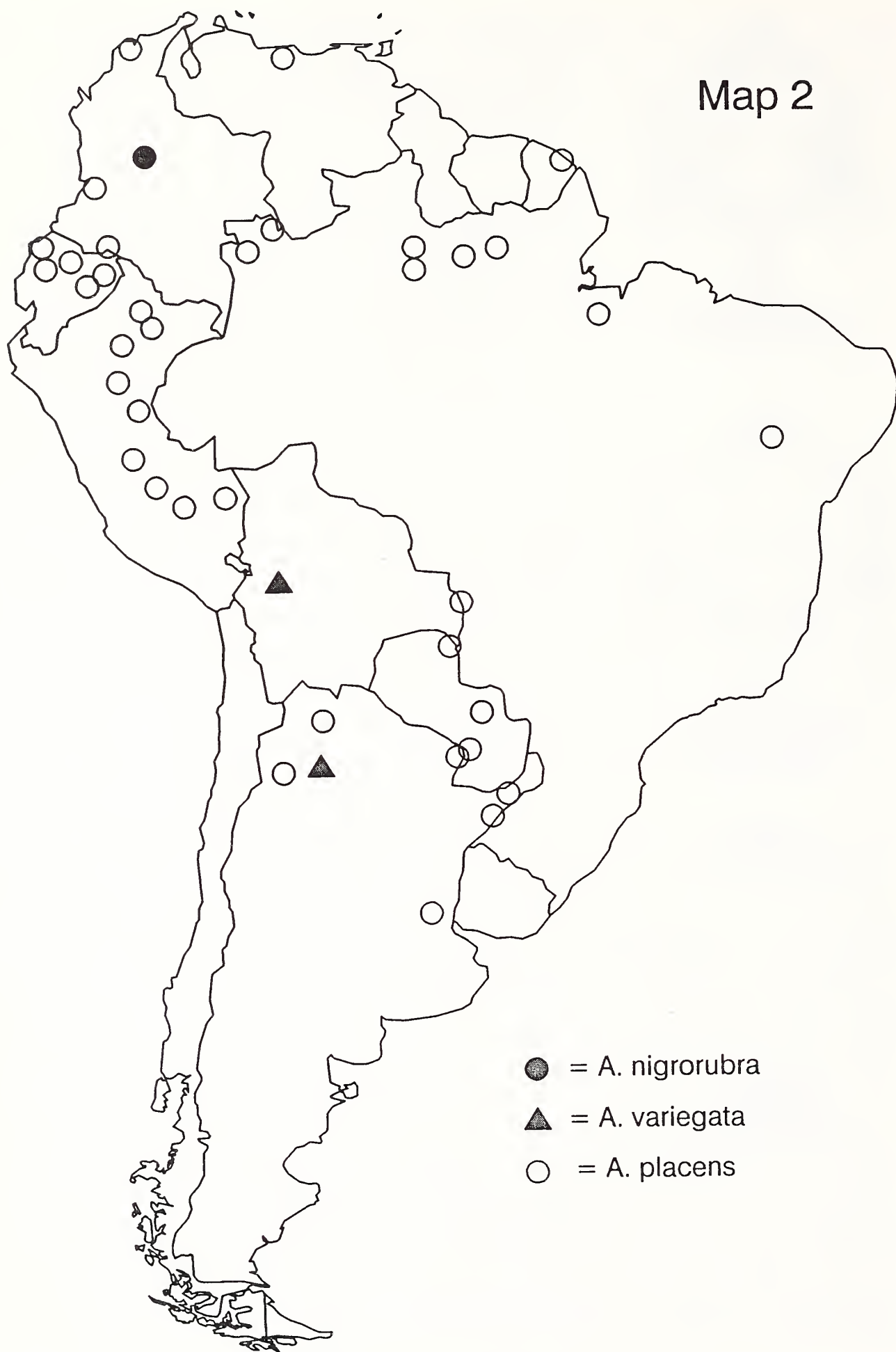
The type specimen of *Strachia quadripunctata* Signoret, 1851 was not examined, but the figure in the original description is of a specimen with a nearly identical color pattern as that of the holotype of *S. nigrorubra*. Until further evidence is discovered, it seems best to leave this species as a junior synonym of *A. nigrorubra*.





Figs. 39–51. 39–43. *Arocera (Euopta) nigrorubra*. 39. Habitus. 40–42. Pygophore. 40. Ventral view. 41. Caudal view. 42. Lateral view. 43. Left paramere, ectal view. 44–51. *A. (E.) variegata*. 44, 45. Habitus. 46–48. Pygophore. 46. Ventral view. 47. Caudal view. 48. Lateral view. 49–51. Right paramere. 49. Lateral view. 50. Medial view. 51. Ectal view. Symbols: bsp, basal spatulate process; ir, inferior ridge; par, paramere; pla, posterolateral angle of pygophore; prt, proctiger; san subapical notch; sct, sclerotized tubercle.

Map 2



Map 2. *Arocera* (*Euopta*) *nigrorubra* (●); *A. (E.) placens* (○); *A. (E.) variegata* (▲).



*Distribution.* Colombia (Map 2).

*Specimens examined.* This species is known only from the type specimen.

*Comments.* Although the only known specimen is distinctively marked, the markings are not unique. I have examined several specimens of *A. placens* with very similar markings. The only reliable method to separate these two species and also the closely related *A. variegata* is by the male genitalia. In both *A. placens* and *A. variegata*, the lateral surface of each paramere in ectal view is distinctly sinuous with the apex curving distinctly laterad. Each paramere of *A. nigrorubra* is more uniform in shape with the apex curving only slightly laterad. Also, the two to three medially directed teeth on each posterolateral angle of the pygophore of *A. nigrorubra* are diagnostic.

***Arocera (Euopta) variegata*, new species**

Figs. 20, 44–51, Map 2

*Description.* Broadly oval, somewhat convex above, distinctly convex below; dorsal coloration variable, but usually yellow to orange with black markings; dorsal punctuation very weak, indistinct, especially on pronotum and basal disc of scutellum.

Dorsal surface of head black, usually with apices of juga becoming brown; jugal surfaces weakly wrinkled; lateral jugal margins sinuous, nearly parallel, narrowly but distinctly reflexed, becoming slightly inflated distally; juga slightly longer than tylus. Antennae entirely fuscous to black. Ocelli relatively small, distance from each ocellus to adjacent eye at least one and one-half times diameter of ocellus.

Anterolateral pronotal margins slightly convex, distinctly reflexed; pronotal disc yellow to orange with anterior margin and sometimes anterolateral margins black, often forming black spot on each humeral angle, and on each side of midline of pronotal disc (Fig. 44). Scutellum usually yellow or orange with six black macules: a small spot in each basal angle, two larger spots medially along base, one large, subtriangular spot near distal end of each frenalum (Fig. 44), and sometimes one small spot on apex; sometimes scutellum entirely pale, lacking black markings (Fig. 45). Coria yellow to orange with basal one-fourth to one-third black, sometimes with pale coloration continuing cephalad on each clavus and onto basal portions of each corium (Fig. 44); each corium with small black spot near distal end of R + M vein, sometimes lacking black markings except for this spot (Fig. 45); hemelytral membranes fumose with margins transparent. Connexiva yellow or orange with posterior one-third of each segment fuscous to black (Fig. 45).

Ventral surface of head and thoracic segments fuscous to black. Rostrum fuscous to black, extending onto base of abdomen. Legs entirely fuscous to black, except sometimes coxae brown. Ventral surface of abdomen yellow to orange with transverse black spots medially, those near base widest and becoming gradually narrower on distal segments, there forming triangular black area medially; also with black spot in each posterolateral angle of abdominal sternites and black spot just mesad and cephalad of each spiracle; spiracle usually just in edge of black spot.

Posterior margin of pygophore in ventral view concave, posterolateral angles unarmed (Fig. 46); weak submarginal carina parallel to posterior margin becoming wrinkled tumescence medially (Figs. 46, 47); posteroventral surface with relatively deep, semicircular depression; ventral margin sharply carinate (Fig. 47). Each par-

amere C-shaped, distal part sinuously elongate in ectal view with relatively deep subapical notch, apex curving distinctly laterad (Fig. 51); basal, spatulate process projecting in approximately same plane as paramere-head. Basal plates widely separated basally, converging distally, mesial margins somewhat convex, posteromesial angles rounded, posterior margins slightly sinuous mesially (Fig. 20).

*Measurements.* Total length 9.78–11.83 (9.78); total width 5.99–7.10 (5.99); medial length of pronotum 2.05–2.37 (2.05). Medial length of scutellum 4.31–5.19 (4.31); basal width 4.36–4.53 (4.36); width at distal end of frena 1.66–2.21 (1.66). Length of head 1.71–1.93 (1.71); width 2.51–2.84 (2.51); intraocular width 1.44–1.60 (1.44); intraocellar width 0.85–0.98 (0.85); ocellar diameter 0.15; distance from ocellus to adjacent eye 0.24–0.29 (0.26). Length of segments I–V of antennae 0.40–0.55 (0.55), 0.85–1.07 (0.85), 1.18–1.25 (1.21), 1.56–1.64 (1.56), and 1.69–1.71 (1.71), respectively. Length of segments II–IV of rostrum 1.44–1.62 (1.44), 1.14–1.36 (1.14), and 1.03–1.12 (1.07), respectively.

*Holotype.* ♂ labeled "ARGENTINA, Horca Molle, near Tucuman X-18-1968 C.W. & L.B. O'Brien." Deposited in the Florida State Collection of Arthropods, Gainesville.

*Paratypes.* 3 ♀ specimens. (a) "ARGENTINA: Prov. Tucumán, Acheral, 350 m, 9.XII.1966 leg. W. Weyrauch" (♀ LHR); "S. P. Cololao Tucumán 1950 Leg. J. M. Arnau" (♀ MACN); "SUR-YUNGAS CHULUMANI-1-48 BRIDAROLLI" [location in Bolivia] (♀ MACN).

*Distribution.* Bolivia and northern Argentina (Map 2).

*Comments.* This species is most closely related to *A. nigrorubra* and *A. placens*, and may be reliably separated from those species only by the male genitalia. In *A. nigrorubra* each paramere in ectal view is uniformly elongate with the apex curving only slightly laterad, and the posterolateral angles of the pygophore are armed with several small teeth. In both *A. placens* and *A. variegata* each paramere in ectal view is sinuously elongate with the apex curving distinctly laterad, and the posterolateral angles of the pygophore are unarmed. *Arocera placens* has the ventral margin of the pygophore obtusely carinate, whereas *A. variegata* has the ventral margin of the pygophore sharply carinate.

*Etymology.* This species is named *variegata* to reflect its variable coloration.

*Arocera (Euopta) placens* (Walker, 1867)

Figs. 52–60, Maps 2, 4

*Strachia placens* Walker, 1867:316–317.

*Arocera protea* Distant, 1880:73–74, pl. 7, fig. 18; Distant, 1893:336; Lethierry and Severin, 1893:159; Rolston, 1976:3; Froeschner, 1981:68; Brailovsky and Barrera, 1982:237. **NEW SYNONYMY.**

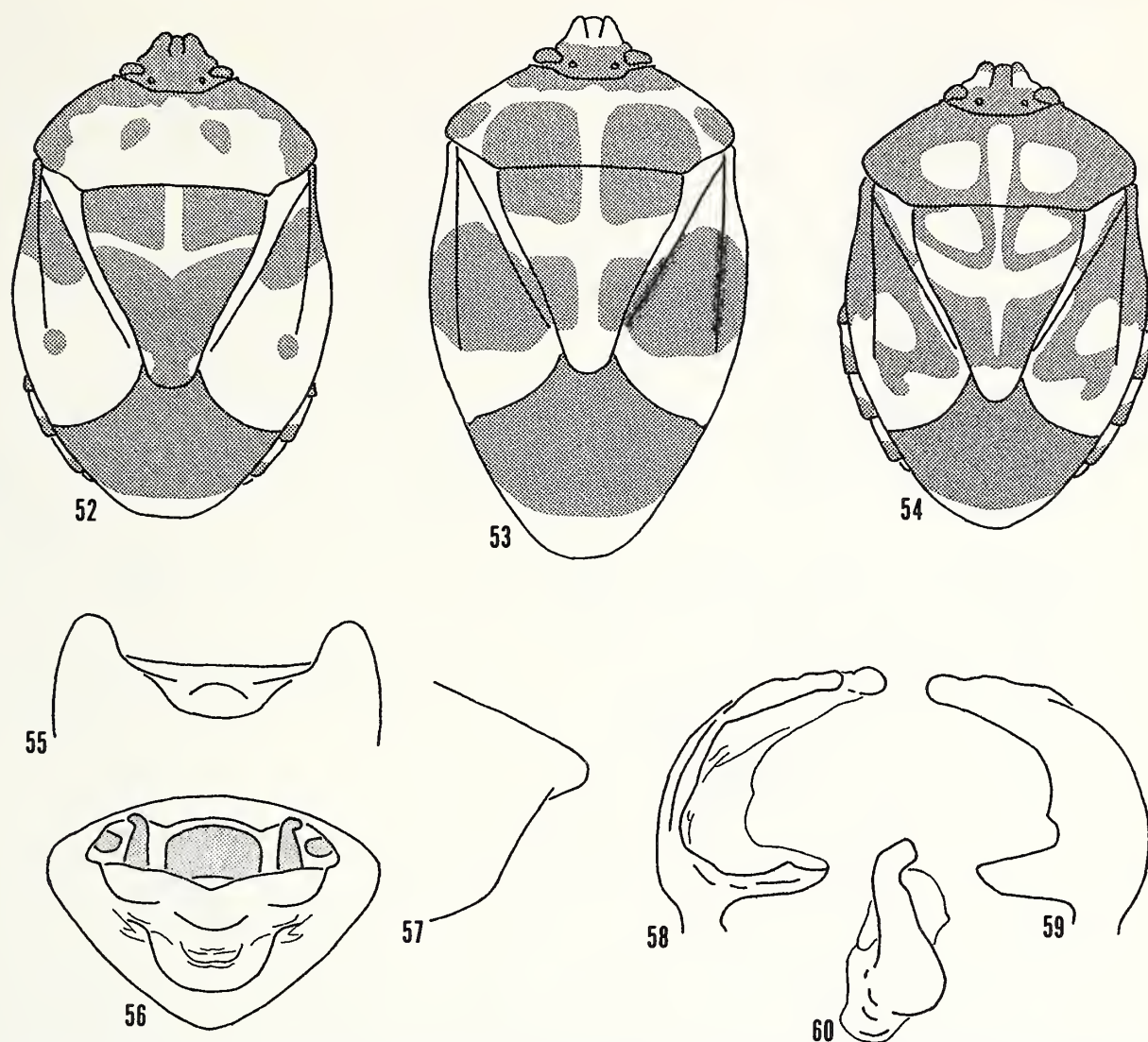
*Arocera affinis* Distant, 1880:74, pl. 7, fig. 19; Distant, 1893:336; Lethierry and Severin, 1893:159; Rolston, 1976:3; Brailovsky and Barrera, 1982:236–237. **NEW SYNONYMY.**

*Arocera patibulata* Distant, 1880:74, pl. 7, fig. 17. **NEW SYNONYMY.**

*Arocera altivola* Distant, 1893:337, pl. 31, fig. 18; Lethierry and Severin, 1893:159; Rolston, 1976:3. **NEW SYNONYMY.**

*Arocera chiriquensis* Distant, 1893:337, pl. 30, fig. 19; Lethierry and Severin, 1893:159; Becker and Grazia-Vieira, 1971:11; Rolston, 1976:3; Grazia, 1984:73. **NEW**





Figs. 52–60. *Arocera (Euopta) placens*. 52–54. Habitus. 55–57. Pygophore. 55. Ventral view. 56. Caudal view. 57. Lateral view. 58–60. Right paramere. 58. Lateral view. 59. Medial view. 60. Ectal view.

### SYNONYMY.

*Arocera jalapensis* Distant, 1893:337, pl. 30, fig. 18; Lethierry and Severin, 1893: 159; Rolston, 1976:3. **NEW SYNONYMY.**

*Arocera placens*: Distant, 1900:391; Rolston, 1976:3.

*Arocera (Euopta) affinis*: Kirkaldy, 1909:109.

*Arocera (Euopta) altivola*: Kirkaldy, 1909:109.

*Arocera (Euopta) chiriquensis*: Kirkaldy, 1909:109.

*Arocera (Euopta) jalapensis*: Kirkaldy, 1909:109.

*Arocera (Euopta) patibulata*: Kirkaldy, 1909:109.

*Arocera (Euopta) placens*: Kirkaldy, 1909:110.

*Arocera (Euopta) proteus*: Kirkaldy, 1909:110.

*Arocera contralineata* Pirán, 1955:82; Becker and Grazia-Vieira, 1971:11; Grazia, 1984:73. **NEW SYNONYMY.**

*Arocera spectabilis* (of author, not Drury): McDonald, 1984:100 (part).

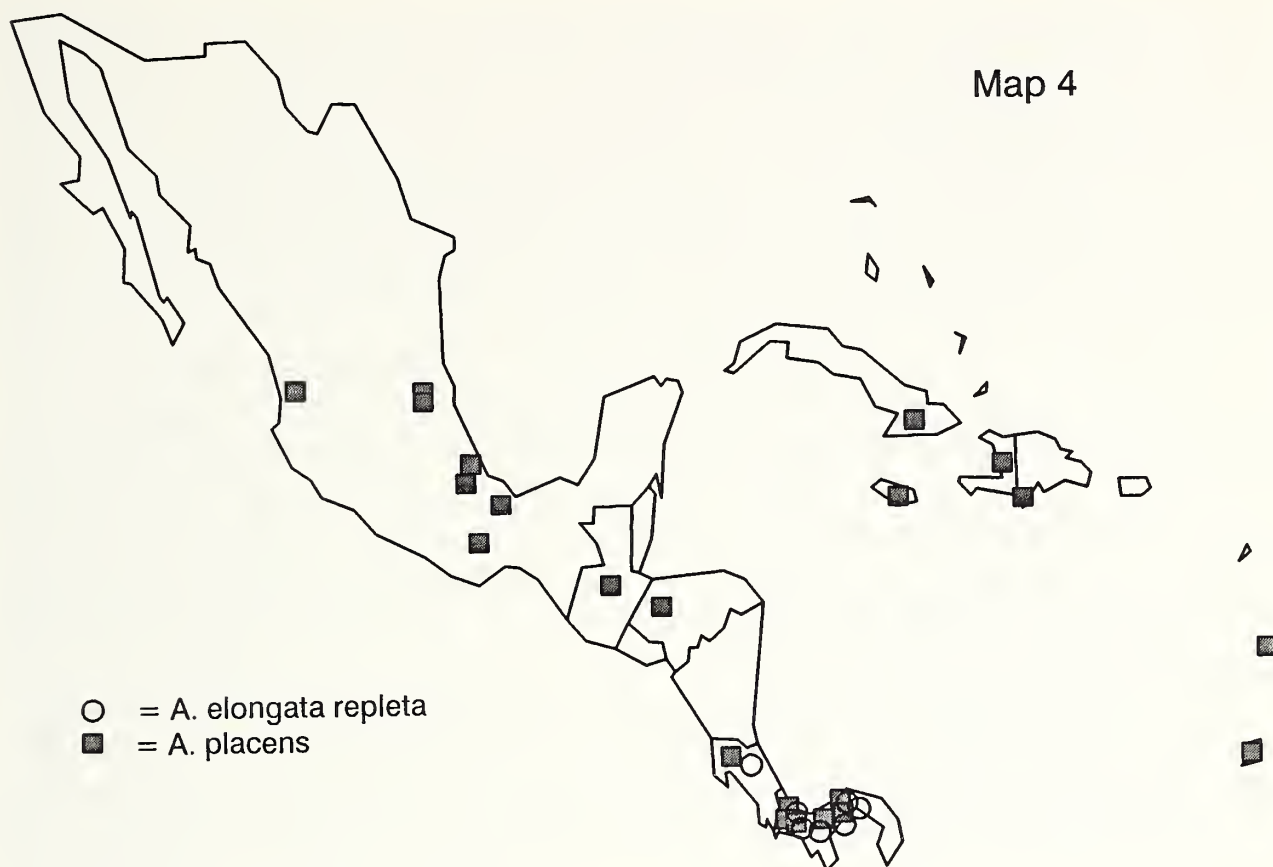
*Arocera nigrorubra* (of author, not Dallas): McDonald, 1984:105–106 (part).

**Diagnosis.** Dorsal coloration extremely variable, usually yellow or orange with



Map 3. *Arocera (Euopta) apta* (○); *A. (E.) rufifrons* (▲); *A. (E.) spectabilis* (●).





Map 4. *Arocera (Euopta) elongata repleta* (O); *A. (E.) placens* (■).

brown or black macules, sometimes mostly black with yellow to red markings. Dorsal surface of head entirely black or variously marked with yellow or orange; lateral jugal margins slightly reflexed, nearly parallel, inflated apically and converging slightly over apex of tylus; jugal surfaces weakly wrinkled near base. Ocelli relatively large, each separated from adjacent eye by about its own diameter. Antennal segment I black. Ventral coloration also extremely variable. Rostral segments II-IV fuscous to black, apex extending onto base of abdomen.

Posterior margin of pygophore concave in ventral view; posterolateral angles unarmed; posteroventral surface with relatively shallow semicircular depression, ventral margin obtusely carinate (Fig. 56); weak submarginal carina parallel with posterior pygophoral margin. Each paramere in ectal view sinuously elongate, apex curving distinctly laterad with relatively shallow subapical emargination (Figs. 58, 59). Basal plates subtriangular, mesial margins nearly straight, widely separated basally, converging apically to narrowly rounded posteromesial angles, posterior margins nearly straight, transverse.

*Types.* Walker (1867) described *Strachia placens* from at least two specimens, one of which was from Santo Domingo, Hispaniola. The type specimen should be conserved at the British Museum (Natural History), but it was not located. The description, however, is adequate to fix this species.

Distant (1880, 1893) described a large number of *Arocera* species, including the following six which are examples of *A. placens*. *Arocera protea* was described from one specimen from San Gerónimo, Guatemala in 1880. The holotype was not examined, but the description with accompanying illustration and location are adequate

to fix this species. Also in 1880, he described *A. affinis* from at least four specimens from Mexico, Guatemala (San Gerónimo), and Nicaragua (Chontales) without designating a holotype or paratypes. Two ♀; syntypes were located. The specimen labeled (a) "affinis Dist." (b) "S. Geronimo, Guatemala. Champion." (c) "Distant Coll. 1911-383." (d) "SYNTYPE" is here designated lectotype. The other specimen is here designated paralectotype and is labeled the same as the lectotype except that it lacks label (a). Both of these specimens were examined. Distant described *A. patibulata* in 1880 from Irazu, Costa Rica. McDonald (1984) considered it a junior synonym of *A. spectabilis*. However, both Distant's description and illustration indicate that the first antennal segment is black, and since this specimen is from Costa Rica it is undoubtedly *A. placens*. The holotype was not examined. In 1893, Distant described *A. altivola* from one ♀ specimen from Volcan de Chiriquí, Panama; *A. chiriquensis* from one ♂ specimen from Volcan de Chiriquí, Panama; and *A. jalapensis* from one ♀ specimen from Jalapa, Mexico. The holotype specimens for the latter species were examined. All of Distant's type material is conserved in the British Museum (Natural History), London.

Pirán (1955) described *A. contralineata* from 22 specimens with the holotype ♂ from Paso de los Libres, Corrientes, Argentina. The holotype was not located, but 20 paratypes were examined from the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Buenos Aires. All 20 specimens are typical specimens of *A. placens*.

*Specimens examined.* 194 specimens collected during every month of the year; deposited in AMNH, BMNH, CNC, DAR, DBT, EGER, ENGL, FSCA, LHR, MACN, OSUC, UNAM, USNM, ZMB. MEXICO: *Chiapas*: 30 m W San Cristóbal de las Casas. *Nayarit*: Tepic. *Oaxaca*: Oaxaca. *San Luis Potosí*: 24.7 m E Lauda de Matamoros, Qro; Tamazunchale; 2 m S Tamazunchale; 3 m W Xilitla. *Veracruz*: 25 m S Acayucan; Córdoba; El Limón; Jalapa. GUATEMALA: San Gerónimo. BELIZE: Rio Grande. HONDURAS: Lago Yojoa. COSTA RICA: *Guanacaste*: La Pacifica nr. Cañas. PANAMA: Boquete; Majé Stn. *Bocas del Toro*: Bocas del Toro; Miramar. *Canal Zone*: Cardenas Village; Coco Solo Hospital; Madden Dam; Pipeline Rd. *Chiriquí*: Fortuna; N. Candelas; Volcan de Chiriquí. *Panama*: Cerro Azul; Cerro Campana; Las Cumbres.

CUBA: S. Rangel; Taco Taco. JAMAICA: Hill Gardens. *Clarendon*: Milk River Bath. *St. Andrew*: Irishtown. PUERTO RICO: *Ciales*: 7 km S Ciales. HAITI: Laxilo. DOMINICAN REPUBLIC: *Pedernales*: 24 km N Cabo Rijo. ST. LUCIA. TRINIDAD: Arima Valley; Simla. *Curepe*: Santa Margarita Circular Rd.

COLOMBIA: *Magdalena*: Rio Magdalena. *Putomayo*: El Pueblito, Parque Nacional Tairona Sierra Nevada de S. Marta; Sta. Rosa de Sucumbios Kofan Indian Village, Rio San Miguel. *Valle del Cauca*: Palmira. VENEZUELA: *Distrito Federal*: Caracas. FRENCH GUIANA: *Cayenne*: Cayenne. ECUADOR: Oriente, Rio Puyayacu; Tres Cerritos. *Esmeraldas*: Esmeraldas. *Los Ríos*: Rio Palenque Biol. Stn., N of Quevedo at km 56. *Napo*: Coca; Shushufindi fields, 25 m N Limoncocha. *Pastaza*: Cuisimi, on Rio Cuisimi, 150 km SE Puyo. *Pichincha*: Los Banos; Quevede; 1 m W Sto. Domingo de los Colorados; Río Palenque Stn., 47 km S Sto. Domingo de los Colorados; Tinalandia, 12 km E Santo Domingo de los Colorados. PERU: *Cusco*: Macchu Picchu Pueblo. *Huánuco*: Cueva de las Pavas Cyn, 8 km S Tingo María; Tingo María. *Junín*: Satipo. *Loreto*: Iquitos, Amazon R; Explorama Lodge,



50 m NE Iquitos on Amazon R; Lake Yarinacocha, 10 km NW Pucallpa; 34 km W Pucallpa, Tournavista Rd, km 3; Rio Mara  n; Yurimaguas. *Madra de Dios*: Puerto Maldonado. *San Mart  n*: Moyobamba region. BRAZIL: *Amazonas*: Benjamin Constant, Rio Javary; Manaus; 5 km N Manaus; Parintins; Tef  . *Bahia*: Encruzilhada. *Distrito Federal*: 30 km SW Brasilia. *Mato Grosso*: Corumb  ; Sinop. *Par  *: Amazon R nr Obidos; Camet  . *S  o Paulo*: Est. Biol. Boraceia, Salesopolis. PARAGUAY: *Alto Paraguay*. *Central*: Colonia Nueva Italia. *Concepci  n*: Horqueta, 44 km E Paraguay R. *Cordillera*: San Bernardino. ARGENTINA: *Catamarca*. *Corrientes*: Paso de Los Libres; Santo Tom  . *Entre R  os*: Liebig. *Salta*: Aguas Blancas.

*Distribution*. Mexico and Cuba south to Argentina (Maps 2, 4).

*Comments*. This species is extremely variable in coloration, and some color forms are quite similar to *A. spectabilis*, *A. melanopyga*, and *A. rufifrons*. *Arocera placens* can be separated from these three species by the black antennal segment I. This species is most closely related to *A. nigrorubra* and *A. variegata* from which it can reliably be distinguished only by the male genitalia. Each paramere in ectal view is sinuously elongate with a relatively shallow subapical notch, the apex curves distinctly laterad, and the ventral margin of the pygophore is obtusely carinate. In *A. nigrorubra*, each paramere in ectal view is uniformly elongate and the apex curves only slightly laterad; while in *A. variegata*, each paramere is sinuously elongate with a relatively deep subapical notch, the apex curving distinctly laterad, and the ventral margin of the pygophore is sharply carinate.

*Arocera (Euopta) elongata elongata* Showalter, 1929

Figs. 62–68, Map 6

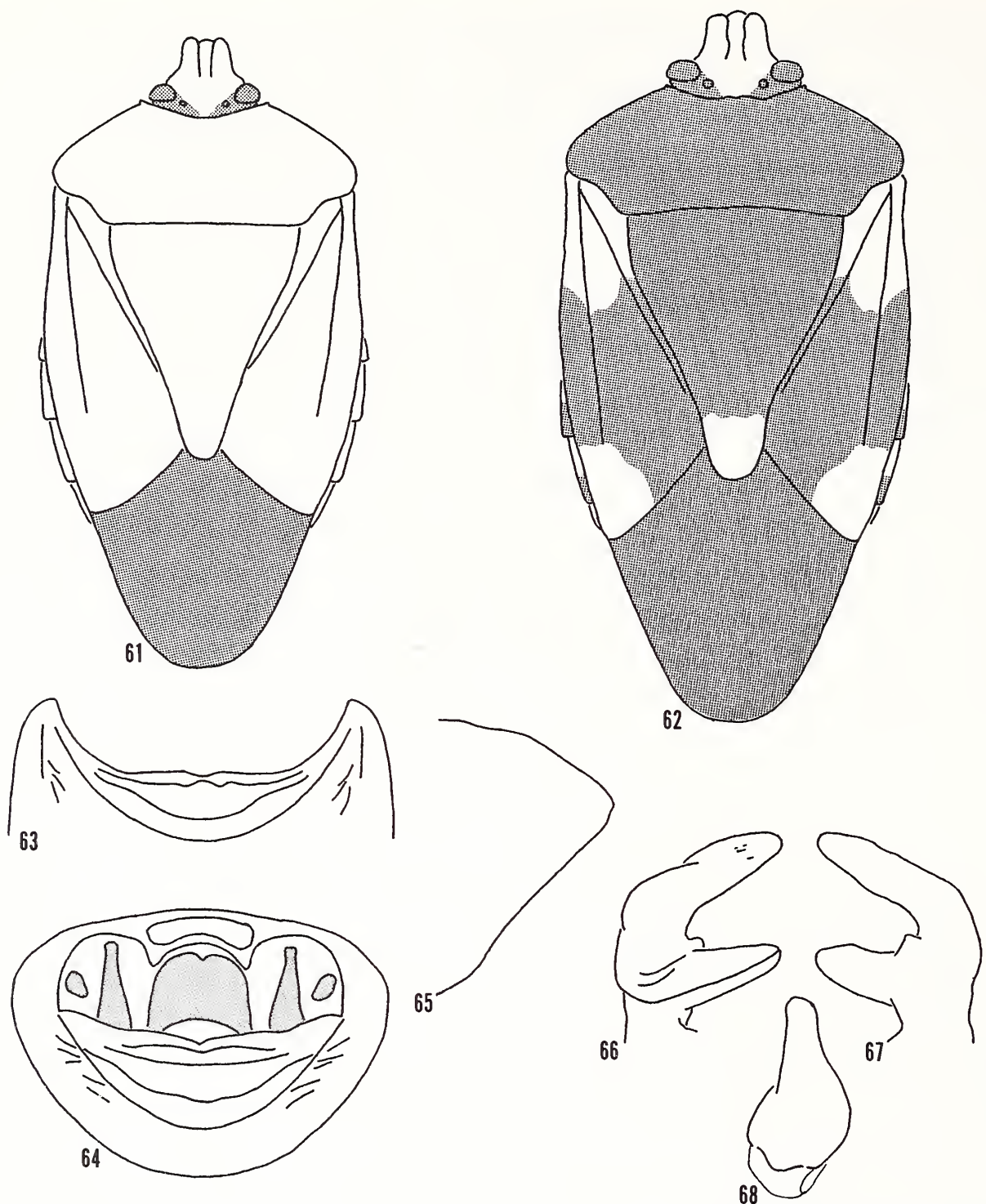
*Arocera elongata* Showalter, 1929:33, 40, pl. V; Van Duzee, 1937:25–27; Pir  n, 1962: 5, fig. 4; Becker and Grazia-Vieira, 1971:11; Sabrosky, 1972:87–88; McDonald, 1984:114, figs. 56–66 (part); Grazia, 1984:73.

*Diagnosis*. Head orange except triangular area behind each ocellus black; antennae black except first segment orange. Dorsal surface black except five orange spots as follows: one occupying basal one-third of each corium; one on posterolateral angle of each corium; and one on apex of scutellum (Fig. 62), sometimes continuing cephalad as thin orange line. Anterolateral margins of pronotum straight to slightly convex.

Rostrum black except segment I orange, extending to middle of fifth (fourth visible) abdominal segment or more; legs black. Propleura completely black; ventrolateral margins of coria orange. Ventral surface of abdomen orange except segment seven and lateral portions of segment six black; genital segments black except some orange markings on genital plates of female.

Posteroventral surface of pygophore forming obtuse, semicircular carina; second, more-clearly defined submarginal carina becoming series of small wrinkles laterally; surface between carinae depressed (Fig. 63). Inferior ridge in caudal view sinuous (Fig. 64). Each paramere C-shaped with large, spatulate process near base of shaft and small tubercle just dorsal to spatulate process (Figs. 66, 67), in ectal view not curving laterad apically (Fig. 68).

*Types*. The lectotype specimen (designated by Sabrosky, 1972) was examined, and is conserved in National Museum of Natural History, Washington, D.C. The lectotype



Figs. 61-68. 61. *Arocera* (*Euopta*) *elongata repleta*, habitus. 62-68. *A. (E.) elongata elongata*. 62. Habitus. 63-65. Pygophore. 63. Ventral view. 64. Caudal view. 65. Lateral view. 66-68. Right paramere. 66. Lateral view. 67. Medial view. 68. Ectal view.

has the following label data: (a) "Oct." (b) "Chapada" and (c) "Type No. 52107 U.S.N.M."

*Specimens examined.* 88 specimens collected during every month of the year; deposited in AMNH, BMNH, CAS, CNC, DAR, DBT, EGER, ENGL, FSCA, LHR, MACN, UNAM, USNM. PANAMA: *San Blas*: Punta Escoses. COLOMBIA: Aguaelaro; Buena Vista. *Antioquia*: Jerico. *Meta*: Restrepo. VENEZUELA: Mérida: Mérida. ECUADOR: Oriente Zawayacu. *Guayas*: La Libertad. *Napa*: Coca; Jatun Sacha Biol.





Map 5. *Arocera (Euopta) apta* (○); *A. (E.) melanopyga* (●).

Stn, 23 km E Puerto Napo; La Selva, E of Limoncocha; Limoncocha; Lumbaquí; Rd between El Puyo and Puerto Napo; Shushufindi Flds, 25 m N Limoncocha. *Pastaza*: Puyo. *Zamora-Chinchipe*: Cumbaratza; Zamora, 35 m ESE Loja. PERU: Montoya. *Cusco*: Macchu Picchu; Pilcopata; Quince Mil; Santa Isabel, Valley of R. Ccosnipata. *Huánuco*: Pozuzo; Tingo María. *Junín*: Prov. Jauja, Satipo; Prov. Tarma, Utcuyacu. *La Libertad*: Cumpang. above Uctubamba. *Loreto*: Middle Rio Ucayali; Pucallpa. BOLIVIA: Lara. *Cochabamba*: Cochabamba; Cristal Mayu, Chaparé; Palmar, Prov. Chaparé; Todos Santos, Prov. Chaparé. *Santa Cruz*: nr. Santa Cruz. BRAZIL: Chapada. *Amazonas*: Benjamin Constant Rio Javary. *Mato Grosso do Sul*: Corumbá.

*Distribution*. Eastern Panama and northwestern South America (Map 6).

*Comments*. Both subspecies of *A. elongata* can be readily identified by their characteristic coloration alone. *Arocera e. elongata* is black with five large orange-red spots on the dorsum, and *A. e. repleta* usually has the dorsum uniformly orange-red (except for black markings on the head and hemelytral membranes). These color



Map 6. *Arocera (Euopta) elongata elongata* (○); *A. (E.) sexpunctata* (●).



patterns are remarkably constant and are unique within the genus. The male and female genitalia of the two subspecies are identical, however, and since each seems to have distinct geographical distributions, they are best considered subspecies. *Arocera e. elongata* occurs throughout northwestern South America and eastern Panama. *Arocera e. repleta* occurs in Panama and Costa Rica.

*Arocera (Euopta) elongata repleta* Van Duzee, 1931

Fig. 61, Map 4

*Arocera repleta* Van Duzee, 1931:94.

*Arocera elongata* (of authors, not Showalter): McDonald, 1984:114, figs. 56–66 (part).

**Diagnosis.** Dorsal surface bright orange except hemelytral membranes and triangular area behind each ocellus black (Fig. 61). Sometimes small, variable, black spots present on basal areas of pronotum and scutellum, and rarely on central area of each corium (one specimen has anterior two-thirds of scutellum and most of medial area of pronotum black). Antennae black except segment I orange. Anterolateral margins of pronotum straight to slightly convex.

Segment I of rostrum orange, remaining segments black, rostrum extending at least to middle of fifth (fourth visible) abdominal segment. Thoracic pleura black except anterolateral margins of propleura and lateral margins of meso- and metapleura orange. Legs black. Ventral surface of abdomen and genital segments as in nominate subspecies.

**Types.** The holotype specimen ♀ of *Arocera repleta* was examined. It is housed in the California Academy of Sciences, San Francisco. The holotype is type no. 3602 and is labeled from the Panama Canal Zone.

**Specimens examined.** 28 specimens collected from 13 May to 13 August; deposited in AMNH, CAS, DAR, DBT, EGER, ENGL, LHR, USNM, COSTA RICA: *Puntarenas*: Monteverde. PANAMA: *Bocas del Toro*: 2 m N divide on hwy to Chiriqui Grande; 10 km NE Fortuna Dam. *Canal Zone*: Barro Colorado Island; Madden Dam; Margarita. *Chiriquí*: Fortuna. *Coclé*: Cerro Gaital. *Colón*: Sta. Rita Ridge.

**Distribution.** Panama and Costa Rica (Map 4).

**Comments.** This subspecies can be identified by its distinctive coloration. No other species or subspecies has the dorsum uniformly orange-red as in this subspecies.

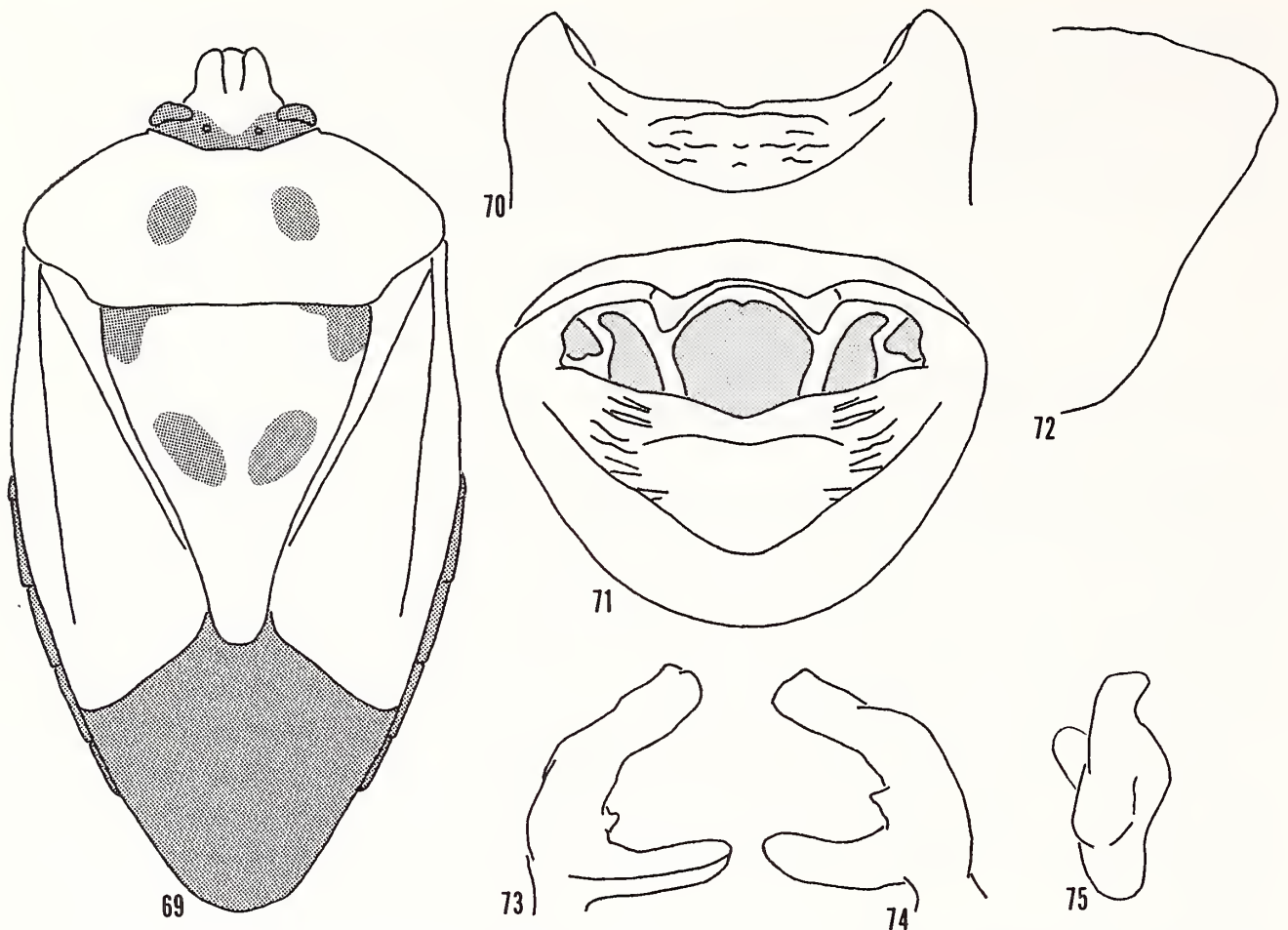
*Arocera (Euopta) sexpunctata*, new species

Figs. 5, 6, 19, 69–75, Map 6

*Arocera elongata* (of authors, not Showalter): McDonald, 1984:114, figs. 56–66 (part).

**Description.** Dorsal surface of head orange except triangular area behind each ocellus black. Segment I of each antenna orange, remaining segments black. Dorsal surface of body bright orange except six small black spots as follows: one in each basal angle of scutellum, one on each side of midline of pronotum just posterior to cicatrices, and one on each side of midline of scutellum about one-half distance between base and apex (Fig. 69). Anterolateral pronotal margins straight to slightly convex. Hemelytral membranes black. Connexival segments uniformly black.

Rostrum black except segment I orange, extending to middle of fifth (fourth visible) abdominal segment. Thoracic pleura black except anterolateral margins of propleura



Figs. 69–75. *Arocera (Euopta) sexpunctata*. 69. Habitus. 70–72. Pygophore. 70. Ventral view. 71. Caudal view. 72. Lateral view. 73–75. Right paramere. 73. Lateral view. 74. Medial view. 75. Ectal view.

and lateral margins of meso- and metapleura orange; ventrolateral margins of coria orange. Legs black. Abdomen completely black except some orange markings on genital plates of females.

Pygophore in ventral view with inferior ridge concave, slightly emarginate medially (Fig. 70), with submarginal semicircular depressed area wrinkled, especially laterally (Fig. 71); in caudal view inferior ridge sinuous (Fig. 71). Each paramere C-shaped with large, spatulate process near base of shaft and small tubercle just dorsad of spatulate process (Figs. 73, 74); in ectal view, paramere-head distinctly curving laterad (Fig. 75). Basal plates widely separated basally, converging distally, mesial margins convex, posteromesial angles broadly rounded, posterior margins sinuous (Fig. 19).

*Measurements.* Total length 13.72–17.35 (15.30); total width 7.89–9.30 (8.67); medial length of pronotum 2.52–3.39 (2.92). Medial length of scutellum 6.39–7.57 (6.78); basal width 5.05–5.91 (5.68); width at distal end of frena 1.89–2.37 (2.05). Length of head 2.32–2.65 (2.54); width 3.06–3.46 (3.31); intraocular width 1.60–1.88 (1.80); intraocellar width 0.91–1.11 (1.07); ocellar diameter 0.29–0.31 (0.29); distance from ocellus to adjacent eye 0.29–0.31 (0.29). Length of segments I–V of antennae 0.74–0.83 (0.83), 1.36–1.69 (1.55), 2.17–2.50 (2.32), 2.54–2.80 (2.70), and 2.37–2.58 (2.48), respectively. Length of segments II–IV of rostrum 2.70–3.24 (3.02), 3.02–3.68 (3.39), and 1.91–2.43 (2.13), respectively.



*Holotype*. ♂ labeled "ECUADOR Pichingha, 15 km E Sto. Domingo 1.XI.74 Col. J. Baier at lights." Deposited in the National Museum of Natural History, Washington, D.C.

*Paratypes*. 6♂♂, 12♀♀. Labeled as holotype (♂ 2♀♀ ENGL; ♀ LHR); labeled as holotype except "31-X-74" (♀ ENGL); (a) "Tropical rainforest general collecting" (b) "ECUADOR, Pichincha, Puerto Quito, 750m. x-xi. 1982 G. Onore" (c) "Brit. Mus. 1982-246" (4♂♂ ♀ BMNH); "ECUADOR Santo Domingo de los Colorados, Pichincha 7 February 1958 R. W. Hodges, 2000'" (♂ LHR); (a) "Ecuador Puerto Ore-llanae" (b) "Col. R. de Lafebre" (♀ UNAM); "ECUADOR: Pichincha Prov., Tinalandia 2800' elev. 12 km E of Santo Domingo June 28–30, 1980 Coll. Dan Bogar" (♀ EGER); "ECUADOR: Pichincha: Santo Domingo January 19, 1968 B. Heineman" (2♀♀ AMNH); and "ECUADOR: Pichincha Sto. Domingo de los Colorados Sept. 22, 1970 R. E. Dietz IV, leg." (2♀♀ USNM).

*Distribution*. All known specimens are from the province of Pichincha, Ecuador (Map 6).

*Comments*. Specimens of this species are very distinctively and consistently marked. No other species has a bright orange dorsal surface with small black spots as described above.

*Arocera (Euopta) rufifrons* (Dallas, 1851)

Figs. 76–82, Map 3

*Strachia rufifrons* Dallas, 1851:267; Walker, 1867:318.

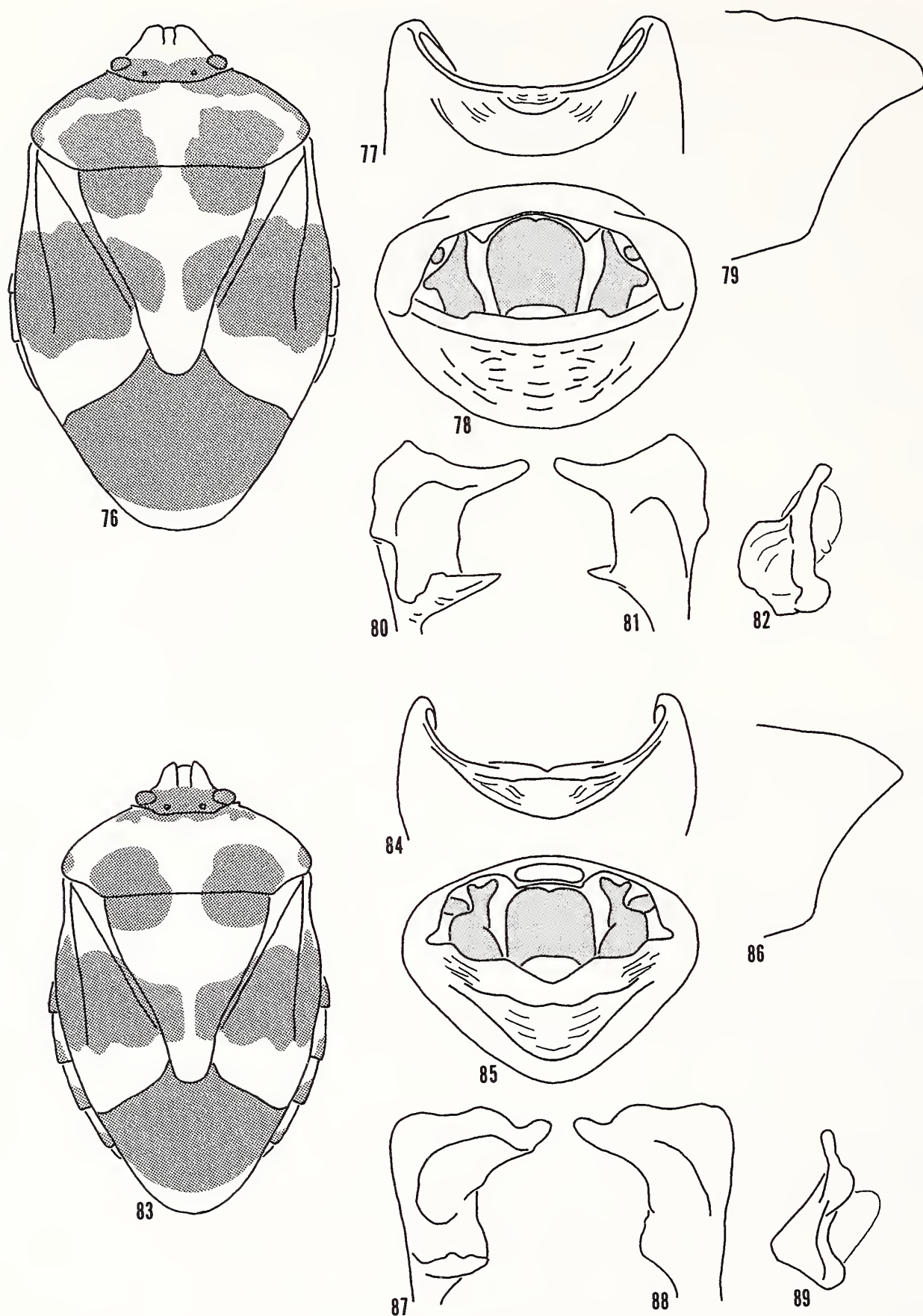
*Arocera rufifrons*: Lethierry and Severin, 1893:159; Rolston, 1976:3; McDonald, 1984:108–109, figs. 37–43 (part).

*Arocera (Euopta) rufifrons*: Stål, 1872:38; Kirkaldy, 1909:110.

*Diagnosis*. Broadly oval, dorsal coloration yellow to orange with the following black areas: basal half of head, pronotal cicatrices and area just anterior to each cicatrice, sometimes anterolateral margins of pronotum, large basal spot on each side of middle of pronotum, large spot on each basal angle of scutellum, lateral semicircular spot near apex of frenum on each side of scutellum, large spot on each hemelytron extending from scutellum to lateral margin, and hemelytral membranes except pale apices (Fig. 76).

Apex of head broadly rounded, nearly arcuate; lateral jugal margins sinuous, reflexed for most of their length; jugal apices not distinctly inflated, jugal surfaces distinctly striated. Ocelli very small, distance from each ocellus to adjacent eye at least 3–4 times diameter of ocellus. Antennal segment I pale except extreme distal end fuscous, remaining segments black. Embolium becoming distinctly wider apically, width at distal end of R + M vein at least twice basal width (Fig. 76). Corium usually appearing distinctly wrinkled in area of black spot. Connexiva uniformly yellow or orange or sometimes with black spot on each posterolateral angle.

Ventral surface of head uniformly yellow or orange. Rostrum fuscous to black, except most of segment I yellow or orange, reaching to base of fourth (third visible) abdominal segment. Ventral surface of thorax yellow to orange with large black spot on central portion of each pleuron, and usually medial areas black. Legs fuscous to black except coxae pale. Ventral surface of abdomen yellow to orange, sometimes



Figs. 76-89. 76-82. *Arocera (Euopta) rufifrons*. 76. Habitus. 77-79. Pygophore. 77. Ventral view. 78. Caudal view. 79. Lateral view. 80-82. Right paramere. 80. Lateral view. 81. Medial view. 82. Ectal view. 83-89. *A. (E.) melanopyga*. 83. Habitus. 84-86. Pygophore. 84. Ventral view. 85. Caudal view. 86. Lateral view. 87-89. Right paramere. 87. Lateral view. 88. Medial view. 89. Ectal view.



with medial black spots, especially on posterior segments, sometimes with a few irregular black spots just mesial to spiracles.

Posterior margin of pygophore in ventral view concave, sharply carinate laterally, becoming thickened and somewhat rugulose medially; posteroventral surface deeply impressed, somewhat V-shaped ventrally; ventral margin carinate laterally becoming more rounded medially (Fig. 77); inferior ridge in caudal view slightly concave with broad medial area produced slightly dorsad (Fig. 78). Parameres in medial and lateral views C-shaped, each with shaft relatively thick dorsal to basal spatulate process (Figs. 80, 81), dorsal margin broadly and shallowly concave, apex curving gently dorsad (Figs. 80, 81), basal spatulate process in nearly same plane as paramere-head (Fig. 82). Basal plates widely separated basally, converging to narrowly rounded posteromesial angles; posterior margins nearly straight with mesial areas more caudal than lateral areas.

*Types.* Dallas (1851) described *Strachia rufifrons* from an indeterminate number of specimens without designating a holotype or paratypes. McDonald (1984) located 2♀ syntypes and designated the specimen labeled 85a as lectotype, and the specimen labeled 85b as paralectotype. Both specimens were examined and are conserved in the British Museum (Natural History), London. The lectotype has the following label data: (a) "Braz." (b) "85a."

*Specimens examined.* 22 specimens collected from September to April; deposited in AMNH, BMNH, EGER, USNM, ZMB. COLOMBIA: Rio Dagus. ECUADOR: Napo: Coca; Tena PERU: Achinamiza; Chanchamayo. Huánuco: Cueva de las Pavas Cyn, 8 km S Tingo María. Loreto: Upper Rio Tapiche. BRAZIL: Guanabara, Corcoyado. Amazonas: Tefé.

*Distribution.* Colombia, Ecuador, Peru, and Brazil (Map 3).

*Comments.* McDonald (1984) partially misidentified this species, including with it specimens of *A. melanopyga* from Mexico. *Arocera rufifrons*, however, is relatively rare and is restricted to northwestern South America. It may be recognized most easily by the very small ocelli and the male genitalia.

*Arocera (Euopta) melanopyga* (Stål, 1858)

Figs. 83–89, Map 5

*Strachia melanopyga* Stål, 1858:437; Walker, 1867:316.

*Arocera melanopyga*: Stål, 1861:140; Stål, 1862:107; Distant, 1880:73, pl. 7, fig. 11;

Lethierry and Severin, 1893:159; Brailovsky and Barrera, 1982:237.

*Arocera (Euopta) melanopyga*: Stål, 1872:38; Kirkaldy, 1909:109.

*Arocera schumanni* Distant, 1893:336, pl. 31, fig. 17; Lethierry and Severin, 1893:159; Rolston, 1976:3; Brailovsky and Barrera, 1982:238. **NEW SYNONYMY.**

*Arocera (Euopta) schumanni*: Kirkaldy, 1909:110.

*Arocera spectabilis* (of authors, not Drury): McDonald, 1984:100–102, figs. 1–8 (part).

*Diagnosis.* Dorsal surface of head smooth, yellow, except basal half fuscous to black, black not extending beyond anterior margins of eyes, often reduced with medial, narrow, longitudinal, pale line. Lateral jugal margins slightly reflexed, nearly parallel, apices of jugs slightly inflated. Each ocellus relatively large, located about

its own diameter from adjacent eye. Antennae black except segment I and sometimes basal portions of segment II yellow to orange.

Dorsal surface of pronotum often with anterior margins fuscous to black, marking sometimes extending along anterolateral margins to humeral angles. Posterior disk of pronotum usually with large black spot on each side of midline (Fig. 83). Black markings on pronotum may be reduced or completely absent; black spots on posterior disk may be diffuse brown. Scutellum with black spot in each basal angle (Fig. 83). Black or fuscous trans-corioscutellar band usually present (Fig. 83), but may be reduced and interrupted by thin, pale, line on middle of scutellum and sometimes on coria. Hemelytral membranes fumose except apical margins pale (Fig. 83). Connexival segments yellow to orange, usually with fuscous to black spots in posterolateral angles (Fig. 83).

Ventral surface of head yellow to orange. Rostrum usually fuscous to black except segment I yellow to orange, sometimes orange markings also on segments II–III, extending to anterior margin of fourth (third visible) abdominal sternite. Coloration of thoracic pleura variable ranging from yellow or orange to fuscous to black on extensive areas of meso- and metapleura, propleura rarely with black markings. Legs with varying amounts of fuscous and pale areas. Abdominal sternites sometimes uniformly pale, but usually with black spots laterally and sometimes along midline.

Posterior margin of pygophore in ventral view concave, sinuous medially (Fig. 84); in caudal view inferior ridge sinuously V-shaped; posteroventral surface wrinkled, with V-shaped depressed area (Fig. 85). Each paramere flat, thin; apex undulating, appearing tri-lobed; in lateral and medial views, lobes not as distinct as in *A. spectabilis* (Figs. 87, 88); basal spatulate process nearly perpendicular to paramere-head (Fig. 89). The female genitalia are typical for the subgenus.

*Types.* Stål (1858) described *Strachia melanopyga* from at least two female specimens from Mexico. The type material is probably deposited in the Naturhistoriska Riksmuseet, Stockholm, Sweden, but the specimens were not located. This species can, however, be fixed by Stål's original description and its type locality. *Arocera melanopyga* is the only known species occurring in Mexico that has the first antennal segment pale.

Distant (1893) described *A. schumanni* from 2♂ and 2♀ specimens without designating a holotype or paratypes. The ♂ specimen labeled (a) "Tepic, Mex. July. Schumann." (b) "B. C. A., Hem. 1. Arocera schumanni" (c) "SYNTYPE" is designated lectotype. The remaining specimens are designated paralectotypes and have the following label data: (a) "schumanni Dist." (b) "Tepic, Mex. July. Schumann." (c) "Distant Coll. 1911-383." (d) "SYNTYPE" (♂); (a) "Tepic, Mex. July. Schumann." (b) "Distant Coll. 1911-383." (c) "SYNTYPE" (♀); (a) "Tepic, Mex. July. Schumann." (b) "B. C. A., Hem. 1. Arocera schumanni" (c) "SYNTYPE" (♀). All four specimens were examined; in important characters of the male and female genitalia they do not differ significantly from *A. melanopyga*. The specimens are conserved in the British Museum (Natural History), London.

*Specimens examined.* 50 specimens collected from 19 April to 9 October; deposited in BMNH, CAS, DAR, DBT, EGER, LHR, UNAM. MEXICO: *Chiapas*: Aguacero; Chicoasen Dam Area; Parque Laguna Belgica, 12 m N Ocozocuatla; 20 km NE Tuxtla Gutierrez. *Guerrero*. *Jalisco*: Estación de Biología "Chamela", 8 km S Chamela. *Nayarit*: 8.7 m E San Blas; Tepic. *Oaxaca*: Palomeres. *Quintana Roo*: Bacalar;



Nuevo, X-Can. *Tamaulipas*: Bocatoma, 6 m S Gomez Farias; 8 m W El Limon; 73.1 m N Manuel. *Veracruz*: Los Tuxtlas; 15.8 m S Tampico. *BELIZE*: Orange Walk Town. *GUATEMALA*: Cayuga; Escuintla Peñon de Siquinala.

*Distribution*. This species occurs in Mexico and northern Central America (Map 5).

*Comments*. This species has recently been considered a junior synonym of *A. spectabilis*, from which it is geographically isolated. Specimens of *A. spectabilis* are consistently marked, whereas *A. melanopyga* is extremely variable.

*Arocera melanopyga* is most similar in coloration to *A. rufifrons* and *A. apta*, both of which occur only in South America. It differs from both of these species by the lack of black markings on the propleura and by the male genitalia. It further differs from *A. rufifrons* by the large ocelli. The ocelli are very small in *A. rufifrons*.

The only similarly colored sympatric species is *A. placens*, which can be separated by the male genitalia and the color of antennal segment I. The first antennal segment is pale in *A. melanopyga* but black in *A. placens*.

*Arocera (Euopta) spectabilis* (Drury, 1782)

Figs. 11–14, 90–96, Map 3

*Cimex spectabilis* Drury, 1782: index, 66, pl. 46, fig. 4.

*Strachia spectabilis*: Dallas, 1851:266; Stål, 1860:22; Walker, 1867:318.

*Strachia generosa* Stål, 1854:233; Walker, 1867:317 [synonymized by Stål, 1872].

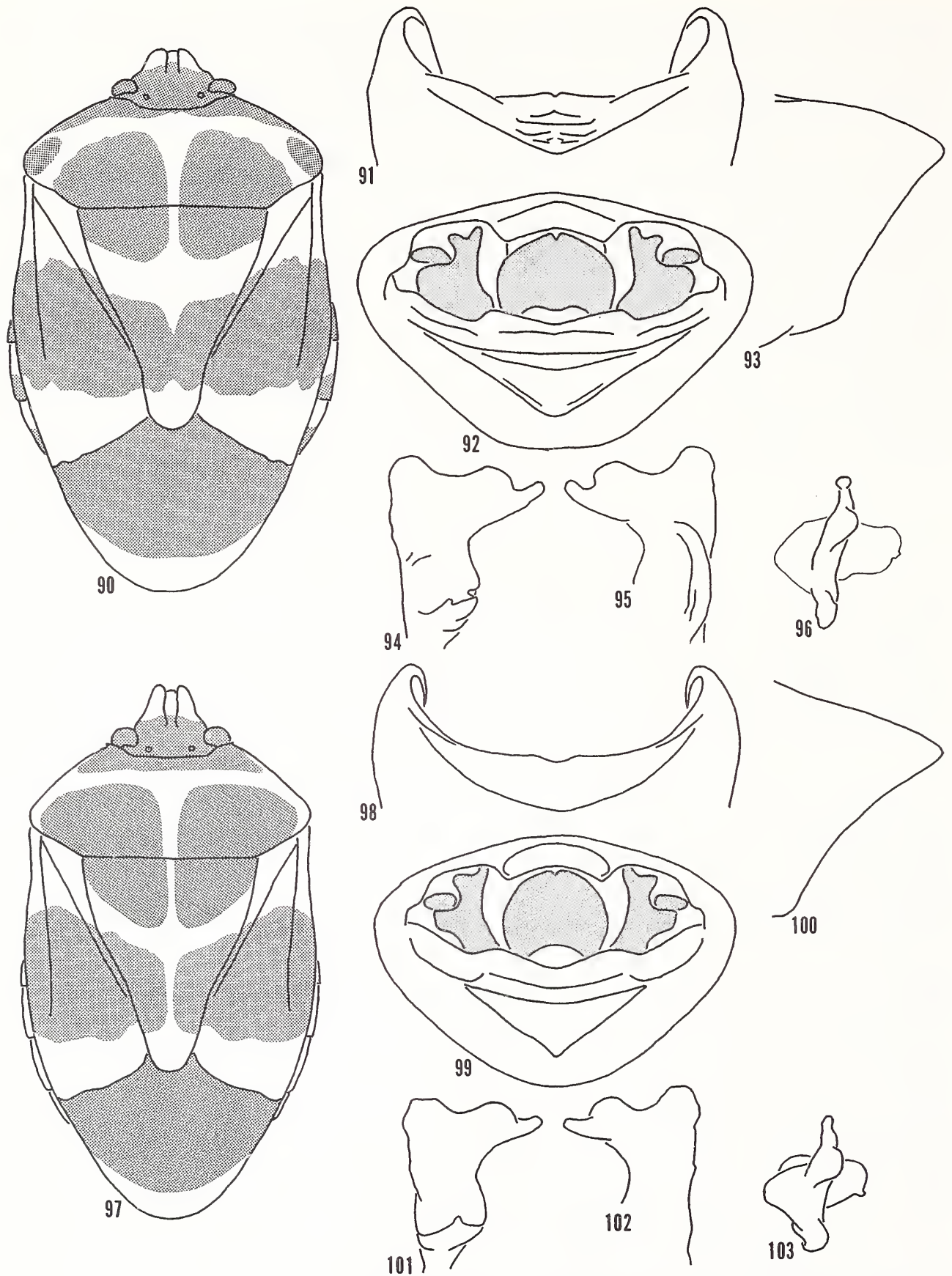
*Arocera spectabilis*: Stål, 1861:140; Lethierry and Severin, 1893:159; Grazia, 1977: 163; McDonald, 1984:100–102; figs. 1–8 (part).

*Arocera (Euopta) spectabilis*: Stål, 1872:38; Kirkaldy, 1909:110.

*Diagnosis*. Dorsal surface of head weakly wrinkled near base of juga, with apical portion orange-red, basal portion black; black usually extending onto basal areas of juga and tylus (Fig. 90). Juga distinctly inflated apically; lateral margins reflexed, sinuous, tapering to truncately rounded apex. Antennae black except segment I red-orange; ocelli relatively large, each located about its own diameter from adjacent eye.

Anterior margin of pronotum black except yellow intruding medially to anterior reflexion; anterior black areas usually extending along anterolateral margins, then forming distinct black spot on each humeral angle (Fig. 90). Large black spot on each side of midline of posterior pronotal disk, extending onto base of scutellum. Broad black band traversing coria and scutellum near middle of scutellum (Fig. 90), sometimes divided on midline of scutellum by thin yellow line (Fig. 90). Hemelytral membranes black, apical margins transparent (Fig. 90). Connexia red-orange with large black spot in each posterolateral angle. Anterolateral pronotal margins nearly straight; hemelytra lacking wrinkles. Embolium somewhat widened apically.

In ventral view, posterior margin of pygophore concave, slightly sinuous (Fig. 91); weak submarginal carina parallel to posterior margin; posteroventral surface of pygophore with broad V-shaped depression, ventral margin obtusely carinate (Fig. 92). Each paramere undulating dorsally, apex curving dorsad slightly more than in *A. apta*, with large spatulate process near base protruding laterad, perpendicular to paramere-head (Fig. 96) with small rectilinear tubercle apically (Fig. 94); subtriangular, flattened, dorsal margin appearing tri-lobed in lateral and medial views (Figs. 94, 95). Basal plates widely separated basally, converging apically; mesial margins



Figs. 90-103. 90-96. *Arocera (Euopta) spectabilis*. 90. Habitus. 91-93. Pygophore. 91. Ventral view. 92. Caudal view. 93. Lateral view. 94-96. Right paramere. 94. Lateral view. 95. Medial view. 96. Ectal view. 97-103. *A. (E.) apta*. 97. Habitus. 98-100. Pygophore. 98. Ventral view. 99. Caudal view. 100. Lateral view. 101-103. Right paramere. 101. Lateral view. 102. Medial view. 103. Ectal view.



convex, posterior margins nearly straight, posteromesial angles rounded slightly prominent.

*Types.* The type of *Cimex spectabilis* was not located, but this species is easily fixed by the illustrations of Drury (1782).

I was not able to examine any of the type material of *Strachia generosa*, but since Stål (1872) himself placed his species as a junior synonym of *A. spectabilis* I have followed this synonymy.

*Specimens examined.* 72 specimens collected from 6 August to 12 March; deposited in AMNH, EGER, UNAM, USNM, ZMB. BRAZIL: E. Bresslau; Guapi; Laguna Azteca, Holango, Hidalgo. *Bahia*: Encruzilhada; Rio, v. olfers, Sello. *Esperito Santo*: Conceição da Barra. *Minas Geraes*: Diamantina; Pedra Azul; Viçosa. *Pernambuco*: Tapera. *Rio Grande do Norte*: Natal. *Rio de Janeiro*: Petrópolis; Rio de Janeiro. *Rio Grande do Sul*: Pelotas; Pôrto Alegre. *Santa Catarina*: Corupa; Rio Natal. *São Paulo*: Casa Grande, Boraceia Field Stn.

*Distribution.* Southern and eastern Brazil (Map 3).

*Comments.* This species resembles some specimens of *A. placens* from which it may be separated by the pale first antennal segment; the first antennal segment is black in *A. placens*. It is most closely related to *A. apta*, which in fact may be a subspecies of this species. The genitalia of the two are very similar, but the differences in coloration are distinct and constant. *Arocera spectabilis* always has black markings on the humeral angles, the connexiva, and the abdominal venter. These markings are never present in *A. apta*.

*Arocera (Euopta) apta* (Walker, 1867)

Figs. 97–103, Maps 3, 5

*Strachia apta* Walker, 1867:323.

*Arocera crucigera* Haglund, 1868:157; Lethierry and Severin, 1893:159; Froeschner, 1981:68. **NEW SYNONYMY.**

*Arocera (Euopta) crucigera*: Stål, 1872:38; Kirkaldy, 1909:109.

*Arocera apta*: Distant, 1880:73, pl. 7, fig. 12; Distant, 1893:336; Lethierry and Severin, 1893:159; Pirán, 1963:107; Rolston, 1976:3; Becker and Grazia-Vieira, 1977:55; Froeschner, 1981:68; Grazia, 1984:73.

*Arocera (Euopta) apta*: Kirkaldy, 1909:109.

*Arocera malonopyga* [sic] (of authors, not Stål): Pirán, 1956:29.

*Arocera melanopyga* (of authors, not Stål): Pirán, 1962:6.

*Diagnosis.* Dorsal coloration very similar to *A. spectabilis*, ground color yellow with six large black macules: one on basal half of head extending onto anterior margin of pronotum, one on each side of midline of posterior pronotal disc continuing onto basal areas of scutellum, one on each corium near middle extending onto scutellum near distal end of frenum, and one consisting of black hemelytral membranes (Fig. 97). Black on basal half of head extends at most only slightly onto basal areas of juga; black markings entirely absent from humeral angles (Fig. 97). Connexiva entirely pale yellow. Dorsal punctation minute and very sparse.

Lateral jugal margins slightly reflexed, sinuous, nearly parallel, extending slightly beyond apex of tylus; jugal surfaces weakly wrinkled. Antennae black except segment I and sometimes basal portion of segment II pale. Each ocellus relatively large,

separated from adjacent eye by about its own diameter. Ventral surface yellow except for one black macule on middle of each pleurite. Rostrum yellow except segment IV black, usually extending onto fourth (third visible) abdominal sternite; legs black except basal half of each femur yellow.

Pygophore with posterior margin in ventral view concave, slightly emarginate medially (Fig. 98), posteroventral surface with shallow, submarginal, triangular, depressed area (Fig. 99); inferior ridge in caudal view sinuous (Fig. 99). Each paramere undulating, trilobed dorsally, apex not curving dorsad as much as in *A. spectabilis*, with large spatulate process near base of paramere protruding laterad (Fig. 101), nearly perpendicular to paramere-head (Fig. 103). Female genitalia typical for subgenus.

*Types.* Walker (1867) described *Strachia apta* from an indeterminate number of specimens from Brazil without designating a holotype or paratypes. Only 1 ♀ syntype was located and is here designated the lectotype. It has the following label data: (a) "62 57" [dorsal surface], "Braz" [ventral surface] (b) "Type" (c) "41. STRACHIA APTA." [dorsal surface] "nereous, with black Ve" [ventral surface] (d) "68." This specimen was examined and is housed in the British Museum (Natural History), London.

The type material of *Arocera crucigera* Haglund should be deposited in the Naturhistoriska Riksmuseet, Stockholm, Sweden, but no specimens were located. McDonald (1984) examined the holotype and considered *A. crucigera* to be a junior synonym of *A. spectabilis*. The type locality of the Brazilian Amazon more likely places it in the known distribution of *A. apta*.

*Specimens examined.* 173 specimens collected from every month of the year; deposited in AMNH, BMNH, CAS, CIAT, CNC, DAR, DBT, EGER, ENGL, FSCA, LHR, MACN, OSUC, UNAM, USNM, ZMB. COSTA RICA: Esparta; Turrialba. *Heredia*: 1 km S Pt. Viejo. *Puntarenas*: Finca Las Cruces, 6 km S San Vito de Java; Las Cruces, 7 km S San Vito; Palmar. PANAMA: Gamboa; Punta Vacamonte, 8°52'N 79°40'W. *Bocas del Toro*: 2 mi N Divide on hwy to Chiriquí Grande; Miramar, 9°N 82°15'W. *Canal Zone*: Barro Colorado Island; Coco Solo Hospital; Ft. Gulch; Ft. Gulion. *Chiriquí*: Renacimiento Santa Clara; Volcan de Chiriquí. *Coclé*: Cerro Gaital. *Colón*: Santa Rita Ridge. *Darien*: 23 km E Cañanzas. *Panama*: Altos de Majé, Chepo; Cerro Campana; ~10 km N El Llano; Las Cumbres.

COLOMBIA: *Amazonas*: Leticia. *Antioquia*: Medellín. *Atlántico*: Caquetá: Rio Orteguaiza nr Rio Peneya. *Meta*: Pto. Gaitón-Carimagua; Restrepo. *Valle de Cauca*: Buenaventura. VENEZUELA: Río Chaurito. *Amazonas*: San Carlos de Ríos Negro. *Aragua*: Rancho Grande. *Carabobo*: Valencia. *Distrito Federal*: Caracas. *Mérida*: Hwy to El Vigía. *Yaracuy*: Aroa. GUYANA: Essequibo R., Moraballi Crk; *East Berbice-Corentyne*: Oronoque & New River heads. *Mazaruni-Potaro*: Bartica District, Penal Settlement; Kartabo Point; Takutu Mtns. FRENCH GUIANA: *Cayenne*: Cayenne; Hwy D6 to Kaw, 34 km SE Roura; Hwy N2 to Regina, 45 km S Cayenne; Hwy N2 to Regina, 67 km S Cayenne. *St. Laurent du Maroni*: St. Jean; Hwy ext. N1, 20 km SE St. Laurent; 13 km SSE St. Laurent. ECUADOR: Salidero. *Azuay*: Sta. Isabel, 65 km SW Cuenca. *El Oro*: Santa Rosa; W of Santa Rosa, just S of Machala. *Esmeraldas*: San Mateo. *Guayas*: Guayaquil. *Los Ríos*: Pichilingue Expt Stn, Quevedo; Río Palenque. *Manabí*: Prov. Penchancha, 8 km N Tinalandia, Sto. Domingo de los Colorados. *Napo*: Coca; La Selva; Limoncocha, on Río Napo; Lumbaqui Stn, 70 km W Lago Agrio. *Pastaza*: Puyo; 16 km W Puyo. *Pichincha*: Puerto Quito; Sto. Domingo



de los Colorados; Río Palenque Stn, 47 km S Sto. Domingo de los Colorados; Tinalandia, 12 km E Sto Domingo de los Colorados; 15 km E Sto. Domingo de los Colorados. PERU: Achinamiza. *Amazonas*: Río Santiago. *Cusco*: Pilcopata; Prov. Paucartambo, Hacienda María, Shores of Río Ccosnipata. *Huanuca*: Tingo María. *Junín*: Prov. Tarma, Utcuyacu. *La Libertad*: Cumpang. above Uctubamba. *Loreto*: Callicebus Res. Stn. Mishana, Río Nanay, 25 km SW Iquitos; Guyabamba, 3 kms from Iquitos; Iquitos, Platanal; middle Río Ucayali; Requena. *Madre de Dios*: mouth La Torre River; Río Tambopata Reserve, 30 km SW Puerto Maldonado. *San Martín*: El Boquerón Pass; Río Huallaga. *Ucayali*: Pucallpa; 34 km W Pucallpa; 3 km NE Abra Diuisoria on Tingo-María-Pucallpa hwy. BOLIVIA: Sara; S. F. Chipiriri. *Co-chabamba*: Chaparé, Alto Palmar; Chaparé, Villa Tunari. *El Beni*: Blancaflor; Riberalta; Rurrenabaque. *La Paz*: Ixiamas. *Santa Cruz*: Buena Vista, Proc. Ichilo; Colpa Gas P. Stn, 9 mi W Warnes; 10 mi W Portachuelo; Santa Cruz. BRAZIL: *Amazonas*: Amazons between Pará and Manaus; Benjamin Constant, Río Javary; Hyutanahan, Río Purus; Manaus; 5 km N Manaus; 244 km Manaus; Uypiranga Río Negro, 14 km from Manaus; Puraquequara; São Paulo de Olivença; Tefé. *Bahia*: Río, v. olfers, Sello. *Mato Grosso*: 10°25'S, 59°28'W; Sinop. *Mato Grosso do Sul*: Corumbá. *Pará*: Almeirim, São Raimundo; 330 m S Belém; Jacaréacanga; Santarém; Urua, 65 km SW Itaituba on BR 230. *Rondônia*: Porto Velho. *Santa Catarina*: Río Vermelho. ARGENTINA: *Salta*: San Martin Palitos.

*Distribution*. Costa Rica to Brazil (Maps 3, 5).

*Comments*. This species is similar in appearance to some specimens of *A. placens* but differs from that species by the pale first antennal segment. It is also closely related to *A. melanopyga*, but *A. apta* is very consistently marked, whereas *A. melanopyga* is extremely variable. The two are also geographically isolated, with *A. melanopyga* restricted to Mexico and northern Central America, and *A. apta* occurring from Costa Rica southward into much of South America. *Arocera apta* is also similar to *A. rufifrons* but can be separated from that species by its larger ocelli and usually by the yellow ground color. *Arocera rufifrons* has very small ocelli, and the ground color is usually orange.

This species is most closely related to *A. spectabilis* and may only be a subspecies of that species. The genitalia of the two species are very similar, but the differences in coloration are distinctive and consistent. *Arocera spectabilis* always has black markings on the humeral angles, the connexiva, and the abdominal sternites; these markings are always absent in *A. apta*.

#### NOMINA DUBIA

##### *Arocera fasciiventris* Breddin, 1901

*Arocera fasciiventris* Breddin, 1901:139; Kirkaldy, 1909:367; McDonald, 1984:118 [nomen dubium].

*Arocera fasciiventris* Breddin was described from Rio Grande do Sul, Brazil. McDonald (1984) listed this species as a *nomen dubium* as he was not able to locate any type material and it is not possible to fix the species from the description. He speculated that it was probably a junior synonym of *A. spectabilis*. The description does match *A. spectabilis* fairly well, except that Breddin indicates that the antennae are black. This suggests that *A. fasciiventris* may be a junior synonym of *A. placens*.

*Arocera capitata* Breddin, 1901

*Arocera capitata* Breddin, 1901:139; Kirkaldy, 1909:367; McDonald, 1984:118 [*nomen dubium*].

McDonald (1984) also listed this species as a *nomen dubium* and suggested that it was a junior synonym of *A. spectabilis*. Once again, its description fits *A. spectabilis* fairly well, but its type locality of Bolivia places it well outside the range of *A. spectabilis*. Breddin mentions that the eyes are unusually small. I have not seen any specimens in which the compound eyes are small, but *A. rufifrons* has very small ocelli, and if Breddin was actually referring to the ocelli, then *A. capitata* is probably a junior synonym of *A. rufifrons*.

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